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CAPACITY TO PREPARE FOR EXTREME EVENTS: REALITY OF THE MUNICIPAL COORDINATION OF PROTECTION AND CIVIL DEFENSE OF PARÁ

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ABSTRACT

The State of Pará faces several natural disasters that have impacted its population and environment, making efficient Civil Defense management essential. The study analyzed the reality of the Municipal Coordinators of Protection and Civil Defense (COMPDECs) in the state, identifying challenges and proposing solutions to improve their performance. The research used structured questionnaires via "Google Forms" to collect data from the municipal coordinators. The results indicate that, although some COMPDECs have a minimum personnel structure, they still face operational difficulties, such as the lack of headquarters and adequate equipment. Strengthening these coordination offices requires investments in infrastructure, training, and essential equipment, such as GPS, drones, notebooks, and vehicles, to improve disaster planning and response. Without this support, the Civil Defense runs the risk of existing only formally, without effective capacity to act.

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INTRODUCTION

The State of Pará, located in the northern region of Brazil, is subject to a variety of extreme events that significantly impact the population and the environment (DOS SANTOS et al., 2025). Among these events are intense rainfall, floods, erosion, prolonged droughts, phenomena that have been intensified by global climate change, and increasing human intervention in the environment (DOS SANTOS et al., 2020; DOS SANTOS et al., 2025).

These natural disasters represent a constant threat to the municipalities of Pará, requiring efficient and coordinated management to minimize their impacts (DOS SANTOS et al., 2020). The various threats faced by Pará demand proactive and strategic action from the Municipal Coordinators of Protection and Civil Defense (COMPDECs).

However, the management of these disasters is not limited to emergency response alone but involves a continuous cycle of actions that include preparedness, prevention, response, and recovery, aiming to reduce human, material, and environmental damage. In this context, Dutra (2021) emphasizes the importance of municipal coordination offices as fundamental structures to strengthen the capacity of municipalities to cope with natural and technological disasters. These COMPDECs are responsible for coordinating efforts between different sectors of society, including governments, non-governmental organizations, and the community itself, to ensure an integrated response (PINHEIRO et al., 2021).

Despite their relevance, the COMPDECs in Pará still face difficulties, such as the lack of financial resources and adequate equipment, operational problems, such as the difficulty of communication and logistics in remote areas, and the lack of technical training of the professionals involved, as explained by Dos Santos et al. (2025). De Resende Londe et al. (2015) state that these limitations interrupt the efficiency of the civil defense cycle, which ranges from risk identification to post-disaster recovery, in addition to hindering the implementation of preventive and mitigating actions that could significantly contribute to reducing the adverse effects of extreme events.

Given this scenario, the need for investments and public policies that strengthen COMPDECs is evident, enabling them to deal with the challenges imposed by natural and technological disasters. Overcoming these obstacles would not only increase the resilience of Pará municipalities but would also transform these challenges into opportunities for the development of innovative and sustainable risk management strategies. Therefore, the performance of COMPDECs should be seen as a central axis in the construction of a society that is more prepared and adapted to climate change and extreme events, ensuring the safety and well-being of the population of Pará.

Thus, the objective of this work is to diagnose the reality of the Municipal Coordinators of Civil Protection and Defense (COMPDECs) in the State of Pará, identifying the main challenges faced and proposing solutions that improve their capacity to act, through structural strengthening, the use of technologies and continuous training, with a focus on reducing risks and disasters, as well as mitigating the impacts of extreme events on vulnerable communities.

METHODOLOGY

The research was carried out through a structured questionnaire for data collection with the municipal coordinators of protection and civil defense of the State of Pará. "Google Forms" was used to collect, automate, and organize 24 questions, divided into thematic sections to facilitate the respondents' understanding and subsequent analysis of the data, as pointed out by Martins and Theóphilo (2009) about the advantages of online surveys in obtaining data in an agile and efficient way.

The questionnaire was prepared with clear and thematic objectives, addressing: Presentation of general data, (SECTION 1) structure and available resources, (SECTION 2) Training and knowledge of the teams, (SECTION 3) Planning and action, (SECTION 4) Challenges and needs and (SECTION 5) Restructuring of the coordination. The questions were prepared based on methodologies established in studies on risk and disaster management (Miguez et al., 2017), ensuring coherence and relevance in obtaining data on the Municipal Coordinators of Civil Protection and Defense (COMPDEC) in the state of Pará.

The questions were structured in closed and open formats, including Likert scales (a questionnaire that measures opinions, attitudes, and motivations), multiple choice, and essay questions. According to DE MIRANDA et al., (2021), this approach enables methodological triangulation, allowing both a quantitative analysis, based on frequencies and trends, and a qualitative analysis focused on the interpretation of the perceptions and challenges reported by the participants.

Before the final application, the questionnaire was submitted to a pre-test with 2 to 3 municipal civil defense coordinators, clearly ensuring the coherence and relevance of the questions, as Gil (2019) clarifies. The application was carried out remotely, with dissemination by email and WhatsApp, and a period of 30 days for response, including weekly reminders to increase the participation rate. The research ensured the confidentiality and ethical use of the data, according to the guidelines for research in the social sciences (FACIOLI; PADILHA, 2019). All participants were notified about the academic and public

nature of the research, and the results were used to support the creation of a project for the acquisition of Civil Defense kits, which would improve the operational structure of the COMPDECs.

After collection, the data were automatically organized by "Google Forms", allowing qualitative analysis and the generation of graphs, as explained by Marquesone (2016). The results were presented to the Military Fire Department and State Coordination of Civil Defense (CBMPA/CEDEC) of Pará, highlighting the main challenges and opportunities of COMPDEC as well as recommendations for public policies and strategies to strengthen risk and disaster management in Pará. Finally, this methodology aims to provide a robust and structured diagnosis, subsidizing future actions to improve municipal civil defense.

RESULTS

The results presented in this study reflect the reality of the Municipal Coordination Offices of Protection and Civil Defense in Pará, highlighting both the advances already achieved and the obstacles that still need to be overcome. The analysis is divided into five main axes: (1) the structure of the coordination, including the internal organization, and the human and material resources available; (2) the training and knowledge of professionals, with a focus on technical training and practical experience; (3) the planning and actions developed, including the preparation of contingency plans and the execution of prevention and response activities; (4) the challenges and needs, which point out the main gaps and demands for the improvement of the system; and (5) restructuring, with proposals to increase the efficiency and effectiveness of the coordination.

(SECTION 1) STRUCTURE OF THE MUNICIPAL COORDINATION OFFICES FOR PROTECTION AND CIVIL DEFENSE

The survey revealed that the majority (90.9%) feel formally instituted in the municipalities in which they operate. However, the challenges are still evident in aspects such as visual identity and infrastructure. Although 72.7% of the coordination offices have an official logo, a significant percentage (27.3%) still does not have an official visual identity. In addition, 68.2% of the coordinators and technicians use standardized uniforms, but 31.8% do not have this resource.

In the context of the capacity to prepare for extreme events in the state of Pará, the lack of an official logo, standardized uniforms for civil defense coordinators and technicians, and the absence of their physical headquarters represent challenges that can compromise

the effectiveness of the Municipal Coordination Offices for Civil Protection and Defense (COMPDEC's).

The absence of a standardized visual identity, such as an official logo, hinders the recognition of the Coordination both by the population and by other institutions. Without a clear visual identity, it becomes more difficult to strengthen municipal civil defense, making it difficult to articulate with governmental and non-governmental agencies for disaster response actions.

The absence of an adequate logo for COMPDEC can hinder its performance in the field, in addition to harming the communication and confidence of the population during emergency operations, compromising the team's authority when operating in risk areas. The use of standardized clothing, with a logo, not only strengthens the institutional identity but also improves the organization of actions and the safety of the agents.

In addition to these issues, the physical infrastructure also proved to be a major adversity. Of the total number of coordinators consulted, 49 (74.2%) stated that they do not have their headquarters. This means that most units operate without an exclusive physical space, which can directly impact the organization, storage of materials, and holding strategic meetings. Therefore, the lack of headquarters makes it difficult to carry out activities, compromising disaster response and the implementation of preventive actions.

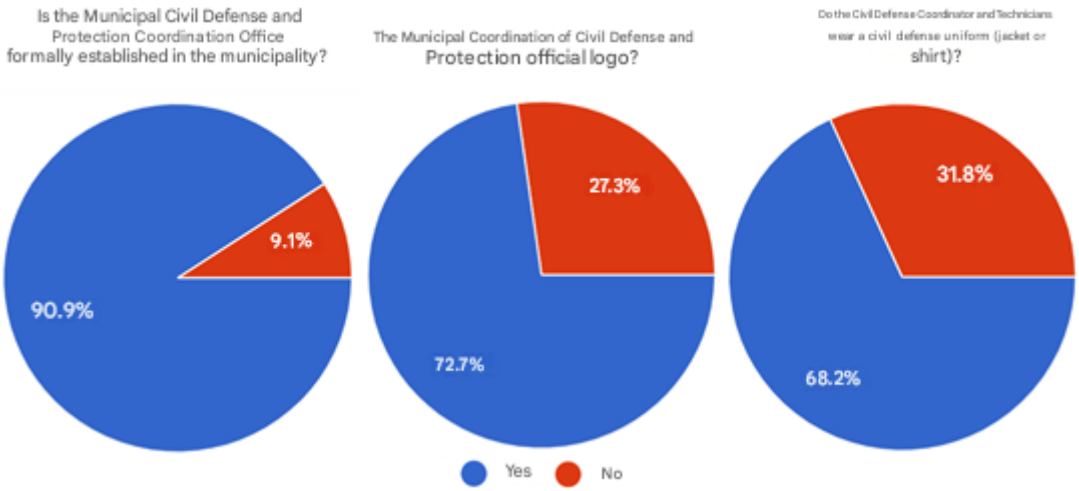
In Graph 1 three pie diagrams represent data on the existence and operationalization of the Municipal Coordinators of Protection and Civil Defense (COMPDCs). The first graph shows that 90.9% of the municipalities have a formally instituted coordination, while 9.1% do not. The second graph indicates that 72.7% of the coordination offices are active, while 27.3% are not in operation. The third graph reveals that 68.2% of the municipalities have coordination with adequate structure and resources, while 31.8% do not have these conditions (Graph 1). This suggests that, even among active coordinators, some structural difficulties may compromise their performance in disaster prevention and response. These data highlight the need to strengthen not only the formal creation of these units but also their actual implementation and functioning.

Another aspect of Graph 1, in the matter of the structure of the COMPDECs in the State of Pará, there is an evident contradiction, because for a Municipal Coordination of Civil Defense Protection to be instituted and functional in the municipality, it is not enough just to formally exist on paper; It is necessary to have a minimum structure to operate efficiently.

This reality raises an essential question: does being formally registered mean being fully instituted and operational? The strengthening of COMPDEC does not only involve legal

recognition, but also investments in structure, training, and organizational identity. Otherwise, civil defense in the municipality runs the risk of being just a name without the real capacity to fulfill its mission of prevention, preparation, mitigation, and response in the face of extreme events.

Graph 1 – Section 1 Questions - Structure and Available Resources



Source: Authors, 2025

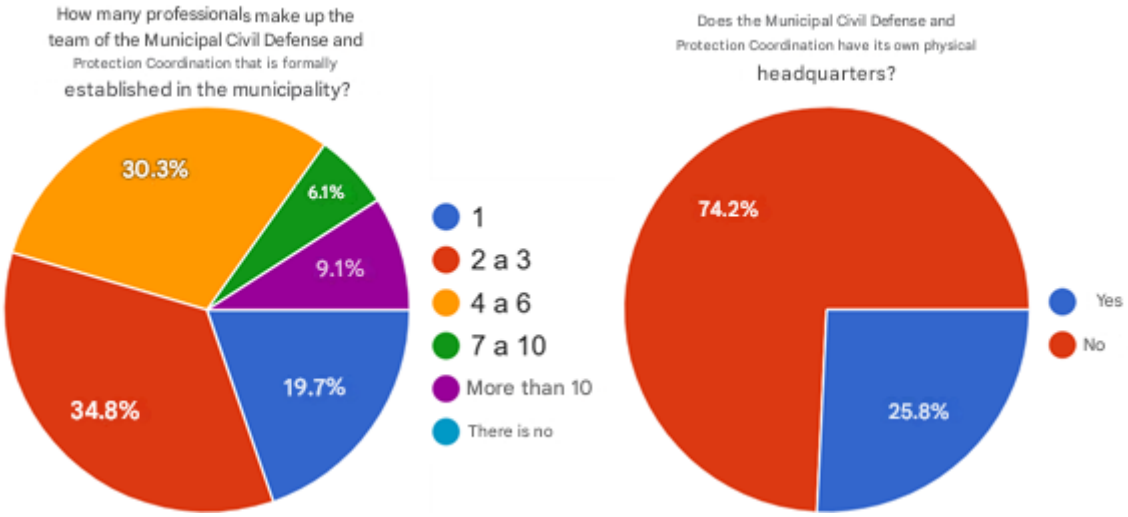
As for the number of professionals who work in the COMPDECs, the data collected in the survey helped to partially deconstruct the old discourse that the COMPDECs in Pará are "one-man". Although some units still operate with a reduced number of professionals, there is a wider distribution of teams in different municipalities. According to the results, 13 coordinators (19.7%) have only one civil defense agent, reinforcing the idea that some COMPDECs still function in an extremely limited way (Graph 2).

Regarding the number of staff, the number of agents varies between municipalities, with the presence of two to three people on the team being more common (34.8%), followed by municipalities with four to six agents (30.3%). However, 9.1% of the coordinators do not have any civil defense agent, evidencing the need to expand the number of professionals, and this is a worrying fact that six coordinators say they do not have any dedicated agent, evidencing serious institutional fragility (Graph 2).

Although the numbers indicate that part of the COMPDECs have a minimum personnel structure, the central issue remains the effectiveness of these teams. As most of the members are not competitive exams, the composition of the coordinators undergoes constant changes with each change in municipal management. This scenario compromises the continuity of preventive actions and the maintenance of technical knowledge essential for disaster response.

The lack of professional stability can lead to the demobilization of trained teams and the need for frequent restarting of training, resulting in operational gaps and loss of efficiency. Without a permanent technical staff, there are difficulties in the preparation and execution of contingency plans, and in articulation with other bodies of the National Civil Protection and Defense System (SINPDEC). Therefore, the mere formal existence of a COMPDEC does not guarantee its functionality, and it is essential to create policies that promote its institutions.

Graph 2 - Section 1 Questions - Structure and Available Resources



Source: Authors, 2025

With the data of available resources (Graph 3), it is difficult to affirm that the COMPDECs in Pará are prepared to act effectively. Although most have access to computers (62.1%) and the internet (66.7%), this alone does not guarantee an efficient response in emergencies or a state of public calamity.

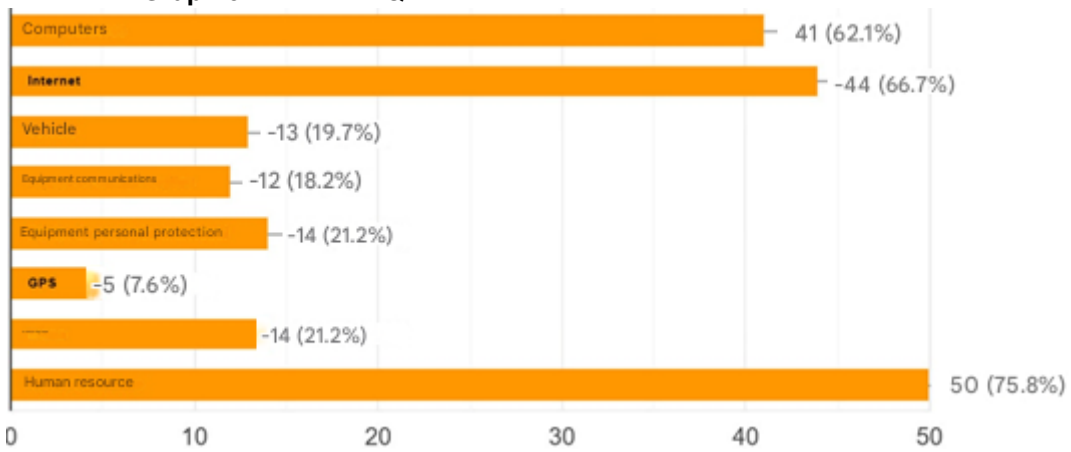
The low availability of vehicles (19.7%) is worrisome, as rapid locomotion is essential for monitoring actions, preventive inspections, and assistance in emergencies or states of public calamity (Graph 3). Without their transportation, teams depend on the availability of other municipal agencies or even private vehicles, which can generate delays and compromise the effectiveness of the response.

The situation becomes even more critical when it is observed that only 18.2% of the coordination offices have adequate communications equipment (Graph 3). In emergencies, fast and reliable communication is vital for coordinating efforts and making strategic decisions. Without radios or other adequate devices, civil defense is limited in exchanging information with teams in the field, increasing operational risks.

Another alarming fact is that only 7.6% of the COMPDECs stated that they have a Global Positioning System (GPS) (Graph 3). This equipment is essential for mapping risk

areas, identifying evacuation routes, and monitoring adverse events. Without it, planning and action are impaired, especially in municipalities with large rural areas or difficult access. Given this scenario, the question that arises is: how to carry out effective Civil Defense work without the basic resources to act? The answer is clear: without minimum investments in equipment, the performance of the Municipal Coordinators will be limited, putting the population, especially those vulnerable, at risk.

Graph 3 - Section 1 Questions - Structure and Available Resources

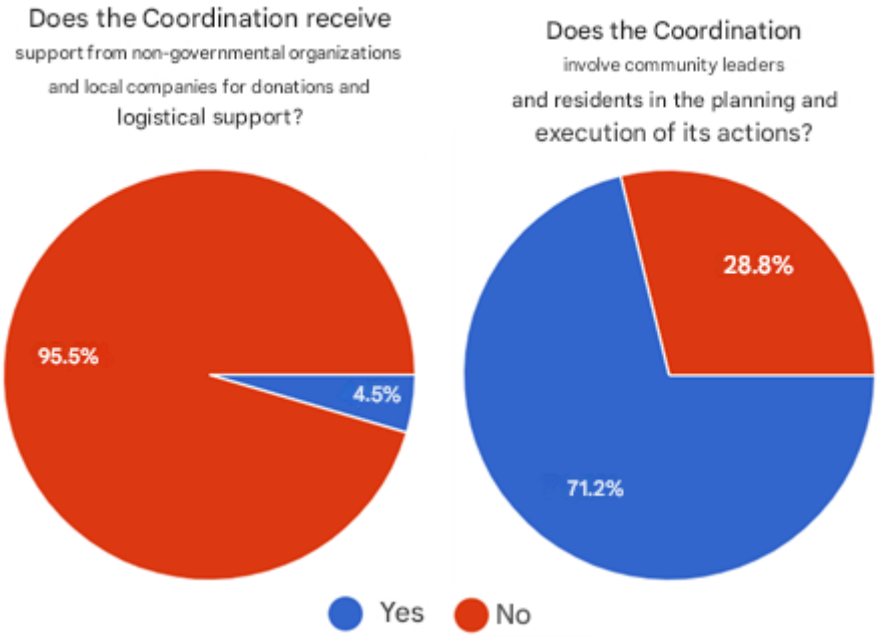


Source: Authors, 2025

Still about the data on the structure of the COMPDEC's, the survey also revealed that most of the coordinators (95.5%) do not receive support from non-governmental organizations or local companies, which may limit response and prevention actions (Graph 4). Despite this, the municipal coordinators state that there is significant community involvement, with 71.2% of the coordinators integrating leaders and residents in their activities (Graph 4).

However, the data reveal an apparent contradiction in the performance of the Municipal Civil Defense Coordinators. This discrepancy raises questions about the real effectiveness of community participation. If leaders and residents are engaged in civil defense activities, why doesn't this involvement result in greater logistical support and donations? One possible explanation is that this participation is limited to consultations or meetings without a practical and continuous engagement in the structuring of municipal civil defense.

Graph 4 - Section 1 Questions - Structure and Available Resources



Source: Authors, 2025

Civil defense is more effective when there is cooperation between the public and private sectors and civil society. However, in Pará, the lack of external support indicates that the COMPDECs operate, for the most part, without strategic partnerships that could strengthen their actions. The lack of support from companies and NGOs may mean that the coordinators cannot mobilize resources or that there is a lack of knowledge about the importance of their work on the part of these institutions.

Thus, if there is indeed community involvement (Graph 4), this engagement needs to be better directed to strengthen Civil Defense actions, creating support networks that guarantee resources and logistical support. Otherwise, community participation may be coexisting superficially, without concrete impacts on the structuring and functioning of the COMPDEC's.

(SECTION 2) TRAINING AND KNOWLEDGE OF THE MUNICIPAL COORDINATORS OF PROTECTION AND CIVIL DEFENSE OF PARÁ

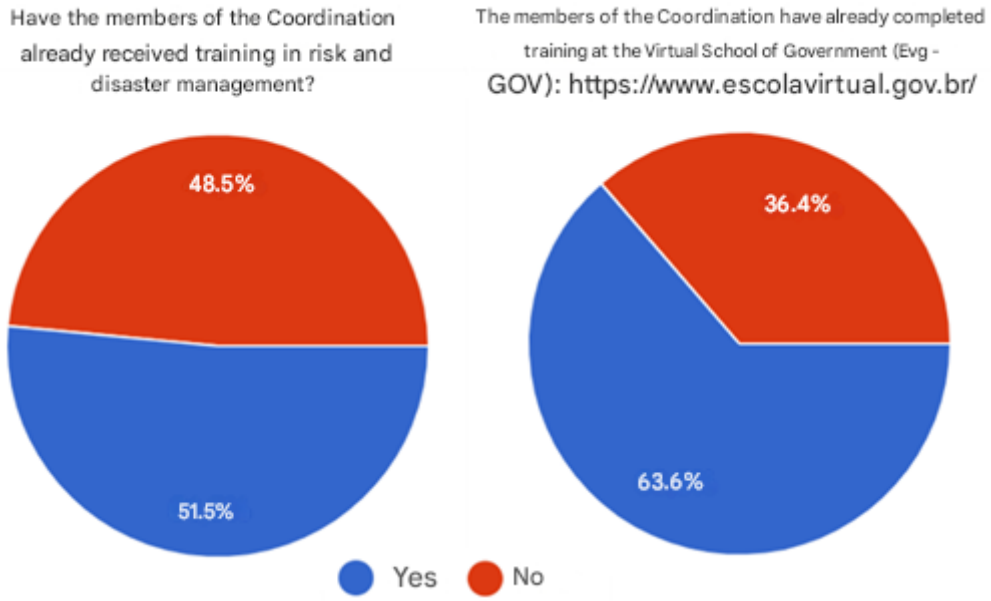
The survey again reveals a scenario of advances and challenges, as 51.5% of the members of the coordination offices have already received training in risk and disaster management, while 48.5% have not yet had this opportunity (Graph 5). This data demonstrates that, despite efforts to qualify agents, a significant portion still lacks training to act in disaster prevention and response.

An institution that has contributed to the training of teams is the Virtual School of Government (EVG), a platform on which 63.6% of respondents stated that they had already

taken courses (Graph 5). The training was specific mainly to disaster prevention (50%), emergency response (39.4%), and post-disaster recovery (24.2%), in addition to other specified areas indicated by 60.6% of the interviewees. These numbers indicate an effort in the search for qualification but also highlight the need to expand access and encourage the continuous qualification of municipal civil protection and defense managers.

However, the obstacles to training are still significant. The lack of available courses (53%) and the scarcity of financial resources for training (53%) are obstacles faced by the coordinators. In addition, work overload is also a critical factor, as 1.5% of respondents said they did not have time available to conduct training.

Graph 5 – Questions in Section 2 - Training and knowledge of professionals



Source: Authors, 2025

In Graph 6 presents an overview of the training carried out by the members of the Municipal Coordinators of Civil Protection and Defense in the state of Pará, highlighting challenges and opportunities for improving the capacity to prepare for extreme events. The analysis of the data reveals that there is an unequal distribution in the focus of training, which can directly impact the response and resilience of municipalities in the face of disasters.

The most expressive data in the graphs is the predominance of the "Others" category, which represents 60.6% of the training courses carried out. This number suggests that many training courses may not be directly related to risk management and disaster management, evidencing a possible gap in the direction of the qualification of the protection and civil defense agent. It is essential to understand which types of training are included in

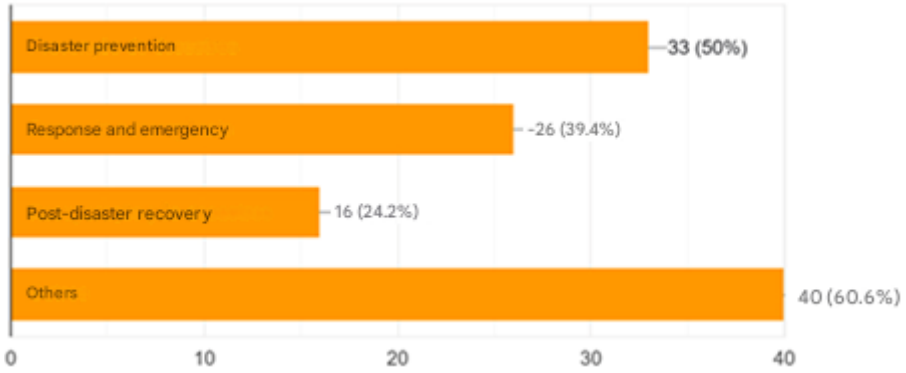
this category and to assess whether they meet the real needs of the Municipal Coordinators of Protection and Civil Defense.

On the other hand, half of the training focuses on disaster prevention (50%), which is a positive point, since prevention is essential to reduce the impacts of extreme events (Graph 6). However, the percentage indicates that there is still a significant number of agents who have not received training in this aspect, which can compromise the capacity to mitigate risks in the municipalities.

Training in emergency response was carried out by 39.4% of the participants (Graph 6), a specific number, but which also demonstrates that not all agents are prepared to act effectively during a disaster. This reinforces the need to expand specific training for relief and emergency actions, ensuring a faster response when extreme events occur.

A worrying aspect of the graphs is the low post-disaster recovery capacity, which accounts for only 24.2% of responses (Graph 6). This indicates that the assistance phase to the affected communities is not a priority in the training of the COMPDEC's, which can prolong the impacts of disasters and increase the vulnerability of the population. Therefore, without experience in acting in the post-disaster phase, municipalities must face difficulties to reestablish normality.

Graph 6 - Questions in Section 2 - Training and knowledge of professionals



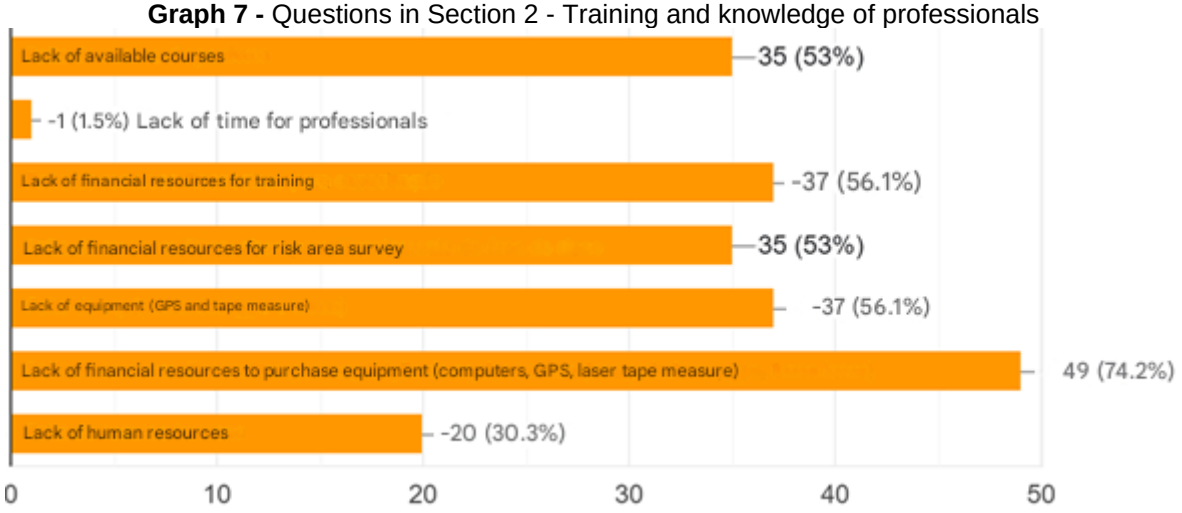
Source: Authors, 2025

Given these data, some measures are essential to strengthen the capacity of municipalities to prepare for extreme events. First, it is necessary to carry out a detailed survey of the training classified as "Others", ensuring that they are inserted in the demands of civil defense. In addition, it is essential to expand the offer of training in post-disaster recovery, allowing municipalities to be prepared to deal with the consequences of extreme events.

Another point of concern is the lack of equipment such as GPS and tape measures (56.1%), in addition to the lack of financial resources for the acquisition of equipment such

as computers, gps and laser tape measure, cited by 74.2% of the coordinators (Graph 7). The scarcity of human resources, pointed out by 30.3%, compromises the capacity of action and continuous qualification of civil protection and defense teams (Graph 7).

Graph 7 - Questions in Section 2 - Training and knowledge of professionals



Source: Authors, 2025

The data presented suggest the need to reinforce continuous training in disaster prevention and emergency response, ensuring that all agents are properly trained to act appropriately in all stages of risk management. The improvement of these capacities will contribute to a more qualified civil defense, strengthening the resilience of the municipalities of the state of Pará in the face of taxes, challenges due to natural disasters and other emergencies.

Given this situation, it is evident that the training of coordinators needs to be strengthened through public policies that expand the offer of courses, guarantee resources for training and enable the acquisition of essential equipment. Only with structural investments will it be possible to improve risk management and disaster management, making civil defense more prepared to protect the population and minimize the impacts of extreme events.

(SECTION 3) PLANNING AND ACTIONS OF THE MUNICIPAL COORDINATION OFFICES OF PROTECTION AND CIVIL DEFENSE IN PARÁ

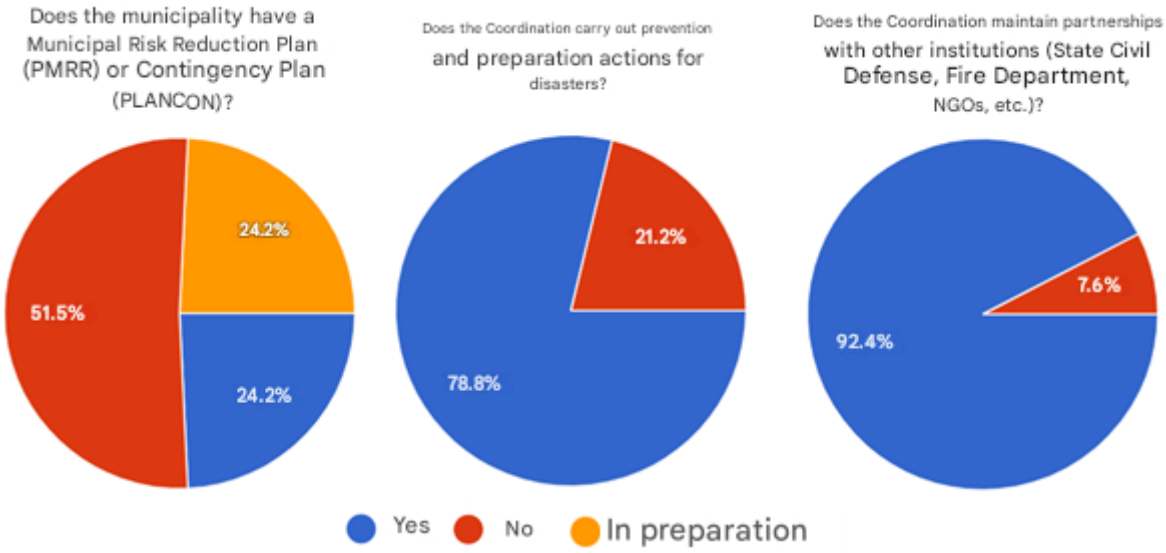
In general, the COMPDEC's show advances in some areas, but still face significant structural impediments. One of the main indicators of a municipality's preventive planning capacity is the existence of a Municipal Risk Reduction Plan (PMRR) or a Contingency Plan (PLANCON). However, only 24.2% of the coordinators stated that they had these documents, while 51.5% stated that they did not have any plan planned and another 24.2%

reported that they are in the process of being prepared (Graph 8). The absence of PMRR or PLANCON negatively affects the ability to respond to organized and structured events in the face of adverse events.

On the other hand, a positive aspect is the strong articulation with other institutions. The survey indicated that 92.4% of the coordinators maintain partnerships with agencies such as the state civil defense, the Fire Department and NGOs (Graph 8). These partnerships are essential to strengthen response capacity and expand the reach of preventive actions. However, the effectiveness of these collaborations may be limited by the lack of their structure and formalized planning, through a PMRR or PLANCON.

Based on data from the Graph 8, it is possible to state that the capacity of the Municipal Coordination of Protection and Civil Defense (COMPDEC) to prepare for extreme events is limited and unequal among the municipalities. Despite this weakness in formal planning, most of the coordinators (78.8%) carried out disaster prevention and preparedness actions, which demonstrates a local effort to mitigate threats (Graph 8).

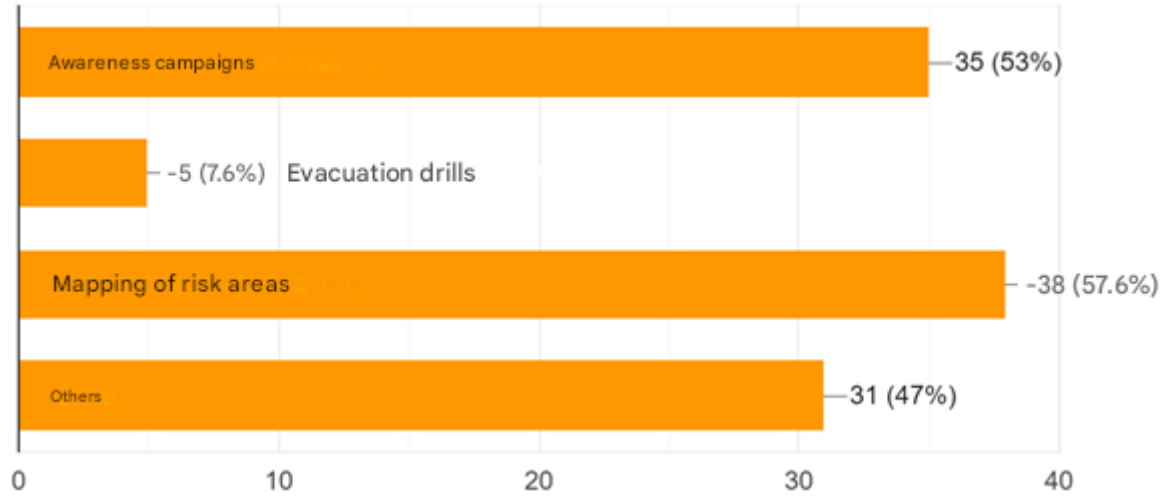
Graph 8 – Questions in Section 3 - Planning and the actions developed



Source: Authors, 2025

The main initiatives include awareness campaigns (53%) and the mapping of risk areas (57.6%), both of which are essential to reduce the vulnerability of the population (Graph 9). However, a worrying fact is that only 7.6% of the coordinators carry out evacuation drills, an essential action to prepare the community and test the effectiveness of the response plans to extreme events.

Graph 9 - Questions in Section 3 - Planning and the actions developed



Source: Authors, 2025

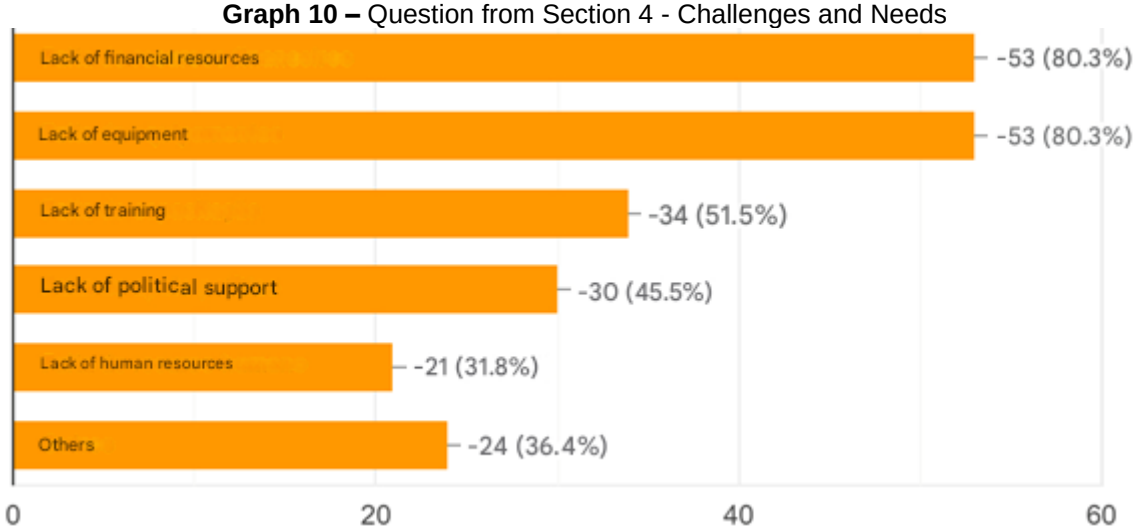
The scenario shows that, despite the engagement in preventive actions, there is still a long way to go to consolidate civil defense in the municipalities of Pará. The implementation of municipal risk reduction plans and the expansion of practical training, such as evacuation drills, are essential measures to make the coordination offices more efficient in protecting the population.

(SECTION 4) CHALLENGES AND NEEDS OF THE MUNICIPAL COORDINATION OF PROTECTION AND CIVIL DEFENSE IN PARÁ

The Municipal Coordination Offices of Civil Protection and Defense in Pará face significant challenges that compromise their effectiveness in reducing risks and disasters. Among the main difficulties listed, the lack of financial resources and equipment appears as the most critical problem, being pointed out by 80.3% of the coordinators (Graph 10). This limitation directly affects operational capacity, repressing everything from carrying out preventive actions to responding to emergencies.

Another significant challenge is the lack of training, mentioned by 51.5% of the interviewees (Graph 10). Without adequate training, civil defense agents can have losses in identifying and mitigating risks, preparing contingency plans, and acting effectively during disasters. In addition, the lack of political support (45.5%) was also highlighted, indicating that, in many municipalities, civil defense does not receive due priority on the public agenda, which can make it difficult to obtain resources and implement preventive policies (Graph 10).

Graph 10 – Question from Section 4 - Challenges and Needs

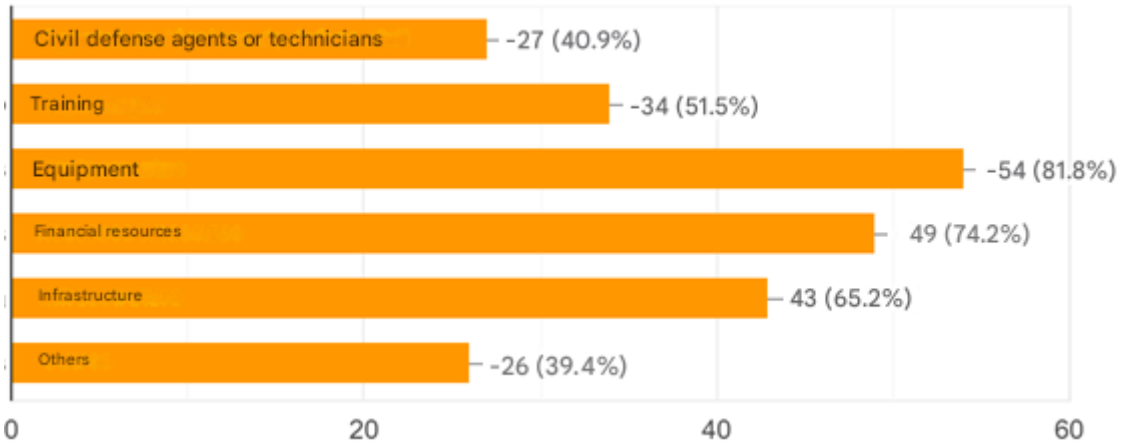


Source: Authors, 2025

The survey also revealed that 40.9% of the coordinators need more municipal agents or technicians to strengthen their teams (Graph 11). The overload of work and the lack of specialized personnel reduce the capacity to plan and execute actions, making the work of civil defense in the municipalities of Pará even more challenging.

Regarding the needs to improve the performance of the coordinators, the acquisition of equipment was pointed out as the main demand, cited by 81.8% of the interviewees (Graph 11). Without basic items such as GPS, communication radios and vehicles, the civil defense has its monitoring and response capacity severely compromised. In addition, 74.2% stated that they need more financial resources to maintain and expand their activities, while 65.2% highlighted the need for adequate infrastructure, including their headquarters for meetings, organization and storage of materials (Graph 11).

Graph 11 – Questions from Section 3 - Challenges and Needs



Source: Authors, 2025

With the data on the challenges and needs of the COMPDEC's, it is evident that, for the municipal civil defense to fulfill its mission of protecting the population, a joint effort is

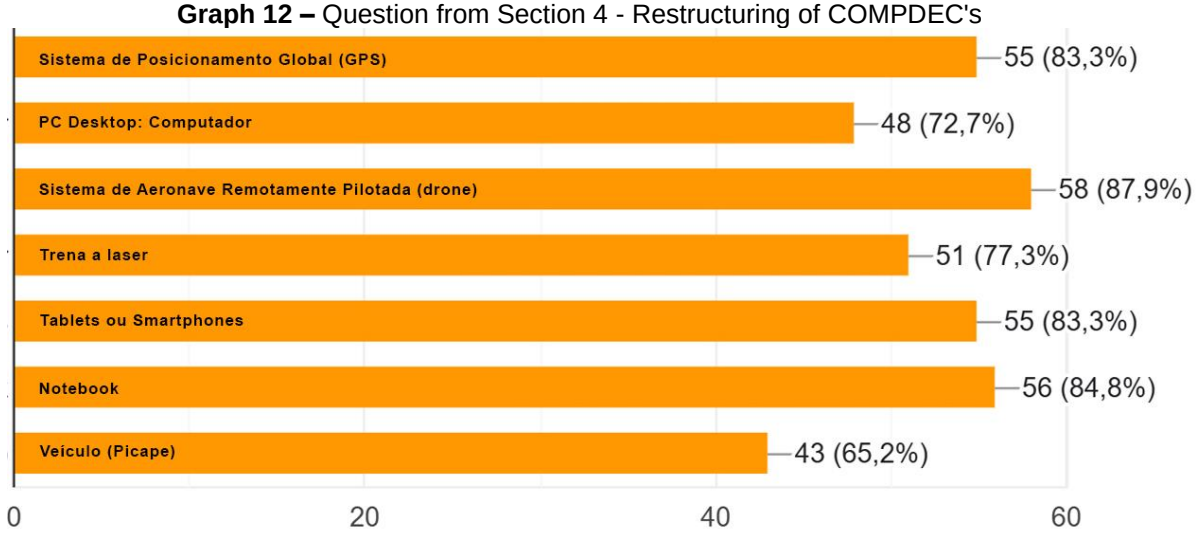
needed between public managers, society and partner institutions. Investments in infrastructure, training and equipment are essential to ensure that these coordinators have real conditions to act efficiently in disaster prevention and response.

(SECTION 5) RESTRUCTURING OF THE MUNICIPAL COORDINATION OF PROTECTION AND CIVIL DEFENSE IN PARÁ

According to the survey data, the restructuring of COMPDEC's in Pará necessarily involves the acquisition of equipment and the expansion of the training offered to agents. The survey showed that there is a great demand for technology and infrastructure to improve disaster prevention and preparedness work. Among the most requested equipment, drones (87.9%), notebooks (84.8%), tablets or smartphones (83.3%) and GPS systems (83.3%) (Graph 12). These items are essential for monitoring risk areas, mapping disasters, and improving communication between the agencies of the civil protection and defense system.

In addition to technology, there is a significant need for vehicles, such as pickup trucks (65.2%), which allow the displacement of teams to respond to occurrences in remote regions. The demand for equipment such as laser tapes (77.3%) and desktop computers (72.7%) reinforces the importance of structuring the headquarters of the coordinators, making them more prepared to act in the multiple threats of the state of Pará (Graph 12).

Graph 12 – Question from Section 4 - Restructuring of COMPDEC's



Source: Authors, 2025

About training for the restructuring of COMPDEC's, the data show that there is a strong interest in strategic training, especially those focused on the mapping of risk areas (86.4%), drone operation (81.8%) and geographic georeferencing applications (78.8%)

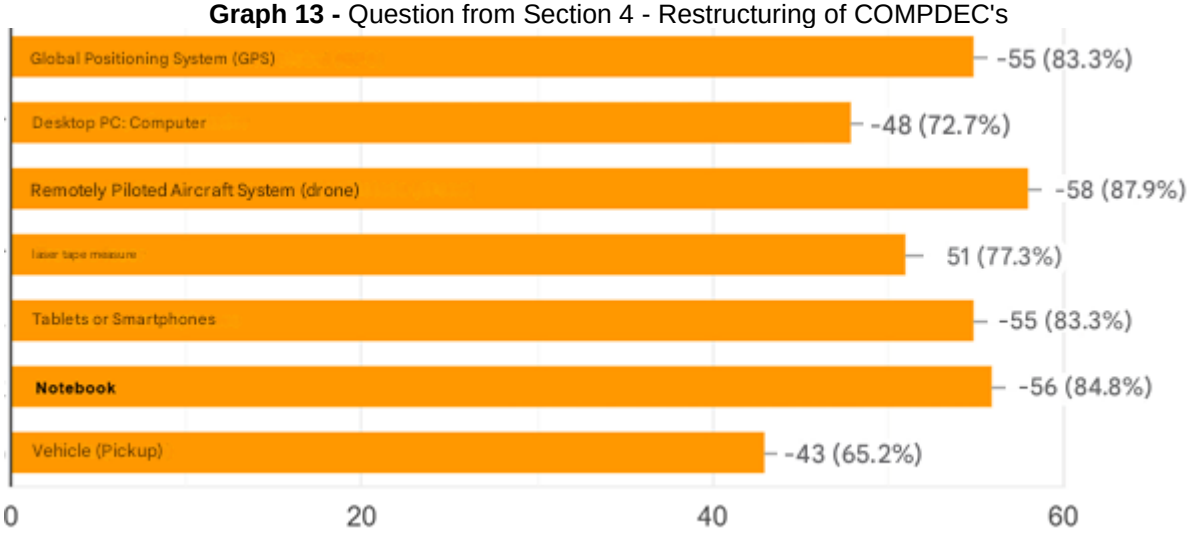
(Graph 13). These skills are fundamental to improve the territorial management of disasters.

Operational training was also widely reported as the main factors that will lead to the reorganization of the COMPDEC's. Forest firefighting qualifications (75.8%), first aid (68.2%) and simulations (66.7%), according to the COMPDEC's, are essential to prepare teams and the population for emergencies (Graph 13).

Curiously, no coordination requested training in contingency plans (0%), which indicates a lack of knowledge about the importance of this document for response actions. The low presence of Contingency Plans (PLANCON) and Municipal Risk Reduction Plans (PMRR) in the municipalities of Pará represents a great weakness in the capacity to prepare for extreme events in the state. With only 3 municipalities out of 114 having a formalized contingency plan, and 51.5% of the coordinators say they do not have any structured planning, showing that a large part of the state is vulnerable to natural disasters and other emergencies, without clear guidelines for the prevention and response to these events (Graph 13).

Although 71.2% of the municipalities claim to involve community leaders and residents in the planning and execution of their actions (Graph 13), this collaboration is hampered by the lack of a formalized document with the actions that must be taken by the municipality in an emergency or state of public calamity, resulting in a deficient articulation and, consequently, the increase in damages and losses when extreme events occur. This, in turn, increases the impact of disasters, generating more severe socio-economic damage and making it difficult for affected communities to recover.

Graph 13 - Question from Section 4 - Restructuring of COMPDEC's



Source: Authors, 2025

Given this scenario, it is essential to encourage the preparation and implementation of contingency plans and municipal plan for risk and disaster reduction, as well as the promotion of continuous training for managers and civil defense agents. Only with proper planning and trained teams will it be possible to strengthen the preparedness and response capacity of COMPDEC's.

Finally, the results of the survey demonstrate that, although the structure of the municipal civil protection and defense coordinators is formally present in most municipalities, there are important challenges related to infrastructure, human and material resources, in addition to the need for greater external support to strengthen their operations.

FINAL CONSIDERATIONS

With the research carried out, it is considered that the COMPDEC's of the state of Pará face difficulties in structuring and operationalizing their activities, as some municipalities do not have their headquarters, depending on spaces shared with other secretariats. In terms of human resources, it was found that a large part of the teams is composed of professionals without specific training in the area, which makes it difficult to prepare and execute responses, especially in municipalities that do not have a contingency plan.

Another relevant factor identified was the low inter-institutional articulation, with little integration between civil defense, fire department, municipal secretariats and private entities. This gap compromises the efficiency of emergency responses and the implementation of long-term preventive actions. On the other hand, the municipalities that receive technical support and training through the Military Fire Department of Pará and the State Coordination of Civil Defense (CBMPA/CEDEC) are more prepared for extreme events, evidencing the importance of state civil defense.

The analysis of COMPDEC's in Pará reveals a challenging situation for the state to adequately prepare for extreme events, but also indicates opportunities to advance through investments in infrastructure, training of specialists and acquisition of equipment. In this context, the creation of public policies for municipal civil defense, through the acquisition of materials and equipment, can contribute significantly to the prevention and efficient response to natural disasters in the state.

Equipment such as civil defense kits, with GPS, drone, laser tape measure, notebooks, drones, tablets and pickup trucks, intended for COMPDEC's, should increase the capacity for planning, monitoring and responding to extreme events. The delivery of a

civil defense kit for accurate risk assessment, real-time disaster monitoring, data collection, and quick decision-making become critical in the process of preparing for extreme events.

Without these materials, the coordinators are left without operational capacity, making it difficult to carry out preventive actions, manage emergencies and communicate with the population and other bodies of the National Civil Protection and Defense System. The lack of these technological resources also prevents accurate data and information from being recorded in the Integrated Disaster Information System (S²ID - National) and in the Unified Management of Risk and Disaster Assessment (GUARD - State) platform, which are programs that manage requests for recognition of emergencies or state of public calamity. This equipment allows for fast, reliable, and georeferenced data collection, which increases the accuracy of the information entered into the system, which is important for the analysis and release of emergency resources.

Finally, it is recommended to train specialists in municipal civil protection and defense, as well as to provide specific technologies, through a civil defense kit, to help prepare municipalities for extreme events and community resilience, reducing the damage and losses caused by natural or technological disasters in the state of Pará.

THE IMPORTANCE OF THE RESULTS FOR COP 30 IN PARÁ

The holding of the Conferences of the Parties on Climate Change (COP 30) in Belém, Pará, represents a unique opportunity to deepen the debate on adaptation to climate change and the resilience of Amazonian cities in the face of extreme events. The results of the survey on the situation of the Municipal Coordination of Protection and Civil Defense (COMPDEC's) in the state reveal relevant structural challenges, such as the lack of adequate infrastructure, the deficiency of technical training and the difficulties of equipment to survey risk areas.

These factors compromise the capacity to prevent disasters and make the municipalities of Pará even more vulnerable to climate impacts. In this way, the results of the survey can be applied in strategic public policies, which aim to modernize and strengthen municipal civil defense, through essential equipment, such as drones, laser tape, GPS, notebooks, tablets and pickup trucks.

The implementation of these actions can be presented at COP 30 as a concrete example of climate adaptation in the Amazon, emphasizing the role of Pará in creating solutions to the global climate crisis. The presence of experts, environmentalists and global leaders at COP 30 can allow the raising of financial and technological resources, which are essential for the implementation of disaster prevention programs and the management of

natural and technological risks. In addition, the conference may generate international investments and partnerships to strengthen civil defense structures in the state.

Finally, the preparation of municipalities for extreme events and the reduction of the impacts of climate change are central issues for the sustainability of the region. The results of the research indicate the need for structural and technological investments, to demonstrate the strength of the Amazon in promoting concrete actions that promote the resilience of local communities.

REFERENCES

1. DOS SANTOS, L. S.; DA SILVA, F. J. A.; RIBEIRO, J. B. M.; DA SILVA JUNIOR, O. M., DE ANDRADE, M. M. N.; COSTA, F. J. B.; DE AVIZ BARBOSA, A. Pará Multiple Threat Map: A Strategic Tool for Alert and Resilience in the Face of Extreme Events in the Amazon. ARACE Magazine, 7(1), 3105-3121, 2025. Available at: < https://periodicos.newsciencepubl.com/arace/article/view/2953>. Accessed on: 02 FEB. 2025.

2. DOS SANTOS, L. S.; DA SILVA JUNIOR, O. M.; DA ROCHA, M. A. N. Map of Multiple Threats: An Overwarning to the Amazonian Population. Disaster risk reduction and resilience in rural and urban areas [electronic resource]. 2nd ed. São Paulo: CPS, p. 626-641, 2020. Available at: < https://www.agbbauru.org.br/publicacoes/Reducao2020/Reducao_2ed-2020-36.pdf>. Accessed on: 10 JAN. 2025.

3. DUTRA, A. S. Disaster management and Social Work: the work of social workers with municipal civil protection and defense agencies. Editora Appris, 2021.

4. PINHEIRO, E. G.; ACORDES, F. A.; DA SILVA FERENTZ, L. M.; DA FONSECA, M. N. Profile of municipal coordinators of protection and civil defense in Paraná (Brazil) in the face of disasters. Contribuciones a las Ciencias Sociales, v. 1, n. 8, p. 127-144, 2021. Available at:< https://dialnet.unirioja.es/servlet/articulo?codigo=9526466> Accessed on: 10 JAN. 2025.

5. MIGUEZ, M.; VERÓL, A.; DI GREGORIO, L. T. Gestão de riscos e desastres hidrológicos. Elsevier Brazil, 2017.

6. DE MIRANDA, A. P. M.; DE OLIVEIRA MUNIZ, J.; DE MELLO CORRÊA, R. Maps of risk perception: multimethod methodology for the analysis of territorialities affected by the armed domain. Editora Autografia, 2021.

7. GIL, A. C Methods and techniques of social research. 7. ed. São Paulo: Atlas, 2019.

8. FACIOLI, L.; PADILHA, F. Ethics and research in Social Sciences: reflections on a connected field. Mediações, v. 24, n. 1, p. 228-258, 2019. Available at: < https://ojs.uel.br/revistas/uel/index.php/mediacoes/article/download/33130/32313/238003>. Accessed on: 5 JAN. 2025.

9. MARQUESONE, Rosangela. Big Data: Techniques and technologies for extracting value from data. Editora Casa do Código, 2016.