





The institutional intervention of disaster risk management as a territorial development strategy in the Chillanes canton

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ABSTRACT

Canton Chillanes is a territory vulnerable to natural and anthropogenic risks. For this reason, institutional intervention is critical to meet the population's needs. However, the reality is different since the territory under study does not have the assistance of the local Risk Management Unit (UGR) despite its vulnerability. In this context, the study's objective is to know the institutional reality regarding the process under study and the population's perception of disaster risks. For this purpose, descriptive, documentary, and field research were conducted to determine a representative sample of the population under study and analyze information provided by those involved in Risk Management of the Decentralized Autonomous Government (GAD) of Chillanes. The results show that almost 100% of those surveyed indicate no adequate risk management and that at least 80% are unaware of the territory's vulnerability to adverse events. Despite this background, the municipal entity's RGU has not been strengthened, becoming one of the leading institutional weaknesses.

Keywords: Hazards; institutional strengthening; risk management; governance; processes; risk reduction.

RESUMEN

The Chillanes Canton is a territory vulnerable to natural and anthropic risks. For this reason, institutional intervention is critical to meet the population's needs. However, the reality is different since the territory under study does not have the assistance of the local Risk Management Unit (UGR) despite its vulnerability. In this context, the study's objective is to know the institutional reality regarding the process under study, as well as the population's perception regarding disaster risks. To this end, a descriptive, documentary and field research

was carried out, determining a representative sample of the population under study and analyzing information provided by those involved in Risk Management of the Decentralized Autonomous Government (GAD) of Chillanes. The results show that almost 100% of those surveyed point out that there is no adequate risk management and that at least 80% are unaware of the territory's vulnerability to adverse events. Despite these antecedents, the UGR has not been strengthened in the municipal entity, becoming one of the leading institutional weaknesses.

Keywords: Threats; institutional strengthening; risk management, governance; processes; risk reduction.

INTRODUCTION

Ecuador is crossed by a significant geological fault located in an area of high seismicity since the country is located on the convergent boundary of two tectonic plates; this causes the canton of Chillanes is in seismic threat due to the regional fault of Pallatanga by the geomorphology that presents the territory, According to the National Risk and Emergency Management Service (SNGRE), the second major threat after landslides in the highlands is flooding in the lower parts of various sectors of the canton. According to the Economic Commission for Latin America¹, more than 60% of the member countries have a medium to very high risk of disasters. Half of these countries are at high and very high-risk levels, indicating that a single disaster in those countries with a high-risk level would cause a national catastrophe with a systemic impact on any dimension of development that has been achieved. According to the Sendai Framework and the 2030 Agenda, comprehensive risk reduction strategies must go beyond civil protection systems and also include elements of a cross-sectoral nature, such as urban risk management, land use planning, river basin management, financial protection, public investment resilience regulation, or preparedness and early warning, issues that cannot be addressed comprehensively by any individual sectoral strategy or plan².

Canton Chillanes belongs to the province of Bolivar, with altitudes ranging from 135 m.a.s.l. to 2900 m.a.s.l., with an area of 655 km² and a population of 16,668 inhabitants; it is an area of incredible biodiversity and diverse microclimates with its characteristic flora and fauna³. According to the last census, the population of Canton Chillanes is mainly dedicated to agricultural activities. This has led to increased levels of deforestation, and due to the relief of the territory, it is considered vulnerable to adverse events. This last part has not been effectively addressed by the institutions in charge, which at the local level is the responsibility of the Municipal Government (GAD Municipal), which is responsible for the development and prevention of natural and anthropogenic risks through public policies, which in the case of Ecuador flows from the National Service for Risk and Emergency Management (SNGRE) to local ordinances, all framed in international treaties such as the Sendai Framework. Risk management involves different degrees of action ranging from the global to the sectoral, local, community and family levels. It requires the presence of systems or organizational structures that reflect these degrees and that bring together, under defined forms of coordination and with different agreed roles, those collective entities of the social representation of the various actors and interests that have a role in the risk creation process and its reduction, anticipation and control⁴.

In order to comply with these processes of attention to Disaster Risk Management, institutional intervention is needed in a strengthened manner with prepared personnel, equipment and technological development to comply with prevention and territorial mitigation actions. These results will promote the development of the community, but they must be centered on development planning and land management, with programs and projects linked in a cross-cutting manner to risk management. In one way or another, the vulnerability to which the territories are exposed is noticeable and even more so if these include vulnerable groups with levels of poverty and extreme poverty, being trapped in a more extensive circle of low levels of quality of life, making the risk much more systemic as it encompasses political, economic, environmental and human factors that at a given moment would be difficult to foresee. The most notorious effects, such as poverty, displacement and migration, result from critical disaster risk factors immersed in climate change, population growth, and weak governance. The Constitution defines the decentralized National Risk Management System, SNDGR, which is made up of the governing body, the risk management units of all public and private entities located in each of the territories, in addition to the academia that studies hazards and vulnerabilities, the coordination mechanisms such as the Risk Management Committee, CGR, and the National Risk Management System, SNDGR.⁵

Disaster Risk Management is both a strategy and a multisectoral process that, according to ECLAC, should be based on five pillars focused on risk identification and reduction, disaster preparedness, financial protection and resilient recovery. The essence of this planning and articulation fulfillment is the institutionality of Risk Management that allows the implementation policies and regulations aimed at allocating resources and an adequate definition of roles and responsibilities.

According to the Sendai Framework⁶, when mentioning Priority 2, disaster risk management at all levels is crucial for efficient management. It is necessary to have clear objectives, plans, competencies, guidelines, coordination between the different sectors, and the participation of relevant stakeholders. Therefore, it is necessary to strengthen disaster risk management for prevention, mitigation, preparedness, response, recovery and rehabilitation. This promotes collaboration and partnerships between mechanisms and institutions to implement appropriate tools for disaster risk reduction and sustainable development.

To complement planning, indicators related to the area of Disaster Risk Management should be proposed; these require the development of statistical processes that allow for decision-making and compliance with the 2030 Agenda for Sustainable Development and the Sendai Framework, where some indicators are established, not only of a regional but also global nature, and which should also serve as a reference for national and local territories. This situation requires governments to develop and pay attention to the generation of statistical data, which should be managed by technical staff through effective investments by entities attached to the area of Risk Management, promoting the use of information at the level of local institutions and should be established transversally in the Development and Land Management Plans (PDOT) prepared by the GAD. According to the Organic Code of Territorial Organization, Autonomy and Decentralization (COOTAD), Article 55 speaks of the exclusive competencies of the municipal governments, indicating that the first of these is planning in coordination with other territorial entities and local stakeholders, formulating the PDOT in coordination with national, provincial and parish plans, which should regulate the use and occupation of land without neglecting the constitutional principles of interculturalism, plurinationality and diversity.⁷

In order to have information on DRR (Disaster Risk Reduction), a technically elaborated database should be available, taking as a baseline the information related to the subject that is available in national statistical

institutions. It should be noted that it would be the most appropriate entity to centralize information as statistical governing bodies to generate new data due to synergies with other institutions.⁸

The use of information has to do with institutional decision-making as long as it is strengthened. The institutional development of Risk Management seen from a macro level where institutions of national competence are being created, without leaving aside the creation of more territorial entities with their own offices and technical staff, has been evolving in recent years not only at the level of project implementation but also of real strategic plans where institutional strengthening has become a transversal axis to support Disaster Risk Management with all its processes in an autonomous, independent and above all technical manner. The coupling of Risk Management through various processes entails articulating several areas within an institution. According to the United Nations Office for Disaster Risk Reduction (UNDRR)⁹: The Sendai Framework states that in order to achieve the expected outcome, several objectives should be pursued that are embedded in preventing the occurrence of new disaster risks and reducing existing ones by implementing integrated measures of all kinds that prevent and reduce the degree of exposure to hazards and vulnerability to disasters, increase preparedness for response and recovery, and thereby strengthen resilience.

The same SNGRE focused on the 2008 Constitution considers that the National Decentralized Risk Management System will be confirmed by the Risk Management Units of the public and private sector and by the attribution of "coordinating actions and strategies that allow the transversalization of risk management in the public and private sector", also using resolution No. SGR-044-2015 of September 1, 2015, issued the Technical Standard for the Organizational Conformation of Risk Management Units in Cantonal Autonomous Decentralized Governments (GAD). However, more than six years after the regulation issuance, progress in the conformation of the Risk Management Units and disaster risk management at the local level has been chiefly limited¹⁰.

It is essential to point out that when talking about processes, the first step is to strengthen the inter-institutional environment, i.e., agreements and synergies to meet objectives aimed at specific organizational systems involving various social actors to take note of management from a corrective and prospective point of view. That is to say, to identify and seek ways to reduce existing risks (corrective aspect) and, in the second case, to study and determine specific actions to implement risk reduction measures present at present but under long-term scenarios in terms of Disaster Risk (prospective aspect). Risk management with an integral approach is proposed at the level of several countries to work in a decentralized manner. However, concurrently, that is to say, it will depend on the event's magnitude to articulate actions between different levels of government to strengthen governance processes and effectively attend to an affected population. Disaster risk governance is of great importance at all levels. It is necessary to have clear objectives immersed in territorial plans, programs and projects, elaborated in a participatory manner for their strengthening with a view to prevention, mitigation, preparedness, response, recovery and rehabilitation.¹¹

By knowing the territorial reality, the GADs can establish institutional processes to address these types of needs and be able to talk about development, for which various actions should be implemented under the control of competent authorities and with the full involvement of the population.

According to studies carried out, governance processes in the field of Disaster Risk Management have not been strengthened since the weaknesses in the state instruments have not been able to face the problems and the different needs in this area; therefore, it can be improved as long as models are proposed according to the institutional reality, promoting a restructuring of decision-making processes in the company of the community.

These management models are integral, including the analysis of the causes of current and future risks internal and external conditions, and it is here where the study of local capacities, training, professional skills and other strengths and weaknesses in Disaster Risk Management is noted. In the environment, the existence of specific management models that serve as a reference for the analysis and implementation of processes in a specific territory is noted, such is the case of the PAR (pressure and release) model (Pressure and release model of disasters) that allows specifying structures related to the institutional field and that in the long run translates into the strengthening of specific activities and processes that allow reaching an effective disaster risk management.

According to the PAR model, vulnerability is when different socioeconomic conditions are exposed to hazards/threats, not only physical aspects, as in the case of constructions, but also social and institutional aspects, such as diseases and lack of strengthened entities.¹²

When talking about processes, it should be understood that these are developed within institutions or organizations and that they are made up of a group of people who pursue common goals, such as the fact of generating feedback actions to adequately execute programs and projects according to the quality and quantity of the budget to prevent and mitigate risk. These actions are not carried out individually but systematically because all the entities settled in a territory act, and when talking about the institution in charge, the different departments and areas responsible act, in this case by a unit or direction of Risk Management, which will be in charge of carrying out the processes in a systematic way and being able to face the risk of disasters from different topics. A system is the interaction of various elements in articulation with the internal environment to achieve common objectives by effectively managing the different units that make up an institution. From this point of view, Risk Management is considered a transversal area within the area of planning; it must also consider the continuous changes in the environment and adapt to them; for example, when an adverse event occurs in the urban and rural sector, specific protocols must be activated that promote joint work not only of specific units but of all the existing institutions in a territory. The decision-making processes of resource allocation and management improvement in public institutions or entities aim to improve institutional results. This has been called management by results. In particular, the contribution of performance information to the improvement of management would also result from the lessons learned from the analysis of the information generated by the analysis of the information.¹³

When we speak of processes, we consider inputs, certain types of information and even requirements that may eventually be transformed as they pass through specific institutional units, which are known as inputs (input) and outputs (output), i.e., the transformation of inputs into products, better known as a process, which is nothing more than a set of sequential activities, ordered logically and which will eventually have to be executed by a responsible party (units). It should be mentioned that this type of activities are based on a previous requirement and that in the case of this study, since it deals with Disaster Risk Management, it may be demanded by an institution, community and even by natural persons who demand projects for attention in the field of risk prevention and mitigation, being very useful the identification of critical processes for the fulfillment of results that at the same time allows reaching high levels of governance of risk management. Governance is crucial to defining lines of authority and decision-making processes. It manifests through individuals, policies, and procedures establishing a framework for decision-making and implementing actions to improve project management. An essential aspect of establishing project governance is to determine and identify the roles, duties and accountability systems of key project stakeholders.¹⁴

In an organization or institution, the process approach is considered from a standard point of view, that is, the conjugation of four elements that are the inputs, the processes, the product and the client or user of the product, the latter considered as the element that feeds the system through its diverse needs and demands, since it is the one who requires the product and the institutional processes and must adjust to them. Generally, we talk about commonly known organizations focusing on their functions, but nowadays, we talk about these same organizations but focused on processes.

Organizations working under a process approach achieve their results more efficiently and effectively since these can be homogenized with the active participation of the units and institutions involved in the territory and, in some way, a continuous improvement can be implemented according to specific weaknesses that may be found at the time of attending an emergency, that is to say, specific knowledge is generated that will be following the institutional reality and that of a territory.

Several models allow disaster risk management development by processes, each of which depends on the reality of the territory and the institution. Several studies have shown the existence of schemes that allow risk management to be integrated from the current point of view and even at the level of future risks. The latter is considered the essence of management since it will allow risk prevention, considered the basis of the risk-disaster process; this scheme is based on four milestones immersed in the identification of future risk, analysis of current risk, disaster and its effects.

The Risk Management units must comply with a mission based on the identified processes and, at the same time, articulate their actions internally within the institution and with those entities located in each of the territories. The reason for this situation is that Disaster Risk Management involves all territorial actors to improve the quality of life of the people and to tend towards sustainable resilience, for which key processes will have to be identified and worked according to, as indicated by Narváez L¹², as described below.

1. Generate knowledge on disaster risk in its different areas.
2. Prevent future risks.
3. Reduce existing risk.
4. Prepare the response.
5. Respond and rehabilitate.
6. Recover and rebuild.

MATERIALS AND METHODS

This type of research was applied to the GAD Chillanes and the local population to understand the events. It focused mainly on the places where the events occurred and the population's reaction to them. Visits were made to the territory to gather information from the population and understand the reality regarding disaster risks and their effects.

This is a descriptive, non-experimental research using institutional documentation such as the Development and Land Management Plan (PDOT), manual of functions and responsibilities of the GAD, design and implementation of a survey to a reference population and technical staff involved in risk management within the entity.

Descriptive or statistical research describes data and characteristics of what is to be studied at a given time and territory. It is descriptive because, with this methodology, a group of people will be characterized, as well as the institutional capacities and the existing risks in the territory. Through documentation such as the Local PDOT and other regulations and ordinances of the territory, information can be collected through a survey of closed items related to events in the locality.

A population survey was carried out with the participation of local technicians who know the territory and the population characteristics. This helped to structure the questions and obtain better answers. Ten closed questions were designed, starting with general data on sex, ethnicity and age. The objective was to collect information on the events and the population's knowledge of Risk Management in their territory. The data collected were systematized using distribution tables in SPSS (Statistical Package for Social Sciences).

In addition, a survey was conducted with the staff of the GAD involved in Disaster Risk Management to understand aspects of its operation and execution of projects. A previous diagnosis was conducted to select seven public servants who are part of the institutional decisions regarding the subject under study. Nineteen questions of a technical-institutional nature were asked to learn more about the risk management process within the Municipal Government.

This research is based on categories, concepts, variables, events, communities or contexts that occur without the direct intervention of the researcher. In other words, the researcher does not alter the research objective. In non-experimental research, phenomena or events are observed as they occur in their natural context and then analyzed.

According to data from the Development and Land Use Plan of Canton Chillanes (2019), the urban population is 2,681 inhabitants, and the rural population is around 14,000, or 16% and 84%, respectively. This population is used as a reference for applying for a survey. According to the 2010 CENSUS, 49.1% are women, and 59.9% are men, with an EAP of 48.1%. Regarding the subject under study, this population is vulnerable to adverse events, especially knowing that the deficit of essential services reaches 85.25% of the dwellings.

From this population, the sample size was determined to carry out the fieldwork. The sample is equivalent to 336 people, obtaining the data presented in the table below:

| Population | Sample |
|------------|--------|
| 2681 | 336 |

Table. 1 Determination of the population and sample to be surveyed

To identify the institutional capacities through a diagnosis of the Risk Management process at the level of the GAD Chillanes, data were obtained through an analysis of a series of documents related to the research; among these are the ordinances, budget allocated to Risk Management, analysis of the Risk Management process of the GAD. To close the process and concentrate the research findings, a SWOT analysis was applied in a methodological and participatory manner with those involved in the disaster risk management process at the

GAD level. This SWOT had a quantitative approach for its evaluation based on specific criteria such as importance, impact, urgency and trend within the institution.

RESULTS AND DISCUSSION

In Ecuador, processes are being developed and strengthened to prevent natural and anthropic disasters, as the National Risk and Emergency Management Service is currently articulating its actions with the Sendai Framework and with the different territorial actors, working on processes that allow the identification, characterization and monitoring of risks and the effects they could cause at the national level. Currently, actions are being promoted to strengthen Risk Management at the GAD level and to work from the local level at the level of exclusive and concurrent competencies to address risks and emergencies, strengthening the institutional framework.

It is relevant to point out these facts since they have allowed strengthening the governance of the GAD in terms of Risk Management based on the recommendations to address specific management tools, such as the formation of the Cantonal Risk Management System and its respective ordinances, which in the case of Canton Chillanes is somehow elaborated but not applied, and hence the importance of this study to be applied in a territory vulnerable to adverse events and that have not yet been worked with the population to generate participatory processes and culture of prevention in the medium and long term.

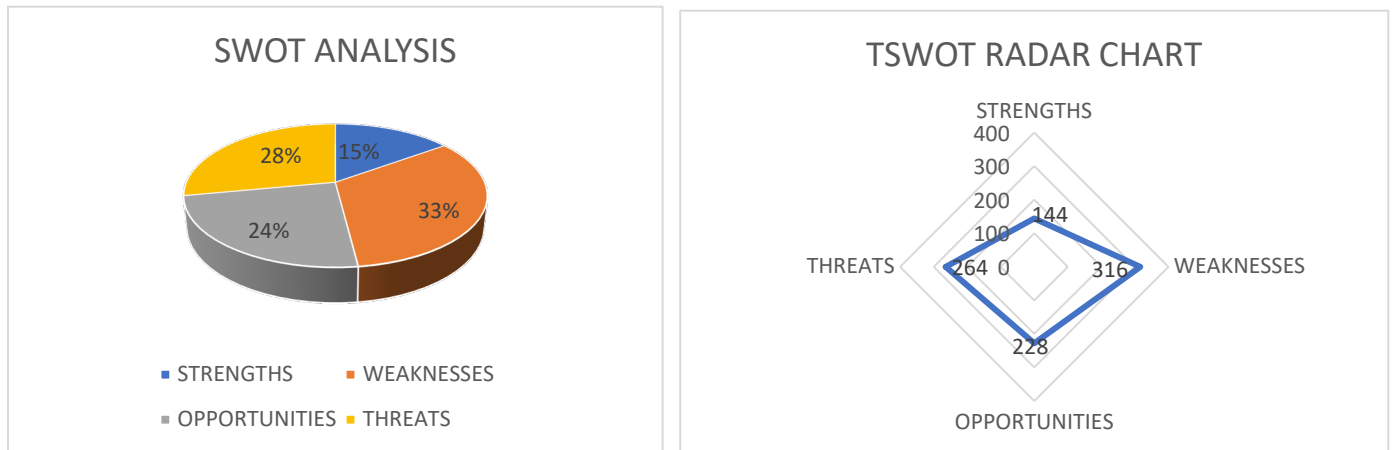
From the point of view of public policies and the state, all levels of government should work according to the type of event; however, it should be noted that the municipal governments have exclusivity in terms of technical regulations implemented in the territory to manage disaster risks, a situation that should be used to allocate budget allocations and implement prevention and response projects if necessary.

The governing process of institutional management is constituted by the municipal council and the mayor's office; the substantive process refers to those activities that allow the delivery of products and services demanded by the citizens. Finally, when speaking of the adjective processes, those that offer products and services at the level of the institution are considered, that is, consultancy and support. This makes it possible to note the compliance with specific regulations of the people hired to execute the mentioned processes and to determine the reason for the shortcomings regarding the attention to territorial needs during an adverse event. The current institutional reality is that the process under study is under the responsibility of the Head of the Work Safety and Social Welfare Unit, who is also in charge of the Disaster Risk Management Unit in the Municipal Government of Chillanes. This reality has led to the fact that there is no precise planning for territorial attention in the event of an adverse event of either natural or anthropic origin, which is why the needs of the affected populations have not been met. Such is the case that 100% of the technicians interviewed agree that the GAD does not have guidelines for the Integral Improvement of Disaster Risks and the same happens with the fact that strategic actions for Disaster Risk Management have not been implemented as a transversal axis in the different processes and services provided by the Local Government, nor are there any known projects that contribute to Disaster Risk Reduction, a situation that is summarized in the following table:

| | F | STRENGTHS | D | WEAKNESSES |
|--------------------------|-----------|--|----------------------|---|
| INTERNAL ANALYSIS | F1 | The municipal government has a process-based organizational structure in place until 2023. | D1 | Despite having an organizational structure, Disaster Risk Management vacancies have not been filled. |
| | F2 | The structure has the necessary operational personnel for disaster risk management. | D2 | The Disaster Risk Management process is under the responsibility of the occupational health and safety technician. |
| | F3 | At the organizational structure level, positions related to Risk Management are mentioned. | D3 | A specialist in the area has not yet filled the position of Risk Management technician. |
| | F4 | Availability of an ordinance for the creation of the Risk Management Unit of GAD Chillanes. | D4 | The Risk Management area is in charge of the public works department. |
| | F5 | We have a technical team of professionals in GIS and projects. | D5 | The professional profiles, in the case of the Risk Management technician, do not specify the specialty in the area. |
| | | O | OPPORTUNITIES | A |
| EXTERNAL ANALYSIS | O1 | Availability of specialists in the area of Disaster Risk Management at the local level. | A1 | Due to its geological formation, the Chillanes canton is exposed to landslides and instability. |
| | O2 | At the national level, there is a guide for strengthening Disaster Risk Management for local governments. | A2 | Many of the canton's territory has steep slopes, where most human settlements are located. |
| | O3 | The State University of Bolivar has the Disaster Management and Risk Management and Disaster Risk Engineering degrees. | A3 | At present, there is a lack of concern on the part of the national authorities to coordinate processes with the GADs in terms of attention in Disaster Risk Management. |
| | O4 | Citizen participation and institutional strengthening are promoted at the territorial level to generate disaster and pandemic response capabilities. | A4 | The population has not been empowered and is unaware of the operation and regulations based on the territorial ordinances. |
| | O5 | Legal framework that allows public and private institutions at the local and provincial levels to implement the UGR. | A5 | Lack of coordination between the provincial government and the cantonal GADs for the implementation of specific programs and projects in Disaster Risk Management. |

Note: The SWOT matrix is structured based on the interviews conducted in the GAD Chillanes and the results of the surveys applied to the population.

Table 2. SWOT Matrix



Note: General result of the SWOT analysis

Figure 1. Overview of internal and external factors

In order to complement the institutional analysis and to know the perception and degree of preparation of the population, the results concerning this purpose are presented below:

55% of the surveyed population does not know how to act in the event of a disaster risk event, 64% have not participated in any training process related to this topic, 80% do not know that Chillanes is a territory vulnerable to adverse events and the same percentage does not know about projects implemented in the territory that are linked to Risk Management.

| CRITERIA | ITEM | FREQUENCY | PERCENTAGE |
|----------|--------------------|-----------|------------|
| SEX | Male | 206 | 61,3 |
| | Female | 130 | 38,7 |
| AGE | 15 to 25 years | 73 | 21,7 |
| | 26 to 36 years old | 68 | 20,2 |
| | 36 to 46 years old | 78 | 23,2 |
| | 46 to 56 years | 42 | 12,5 |
| | 56 years and older | 75 | 22,3 |
| ETNIA | Mongrel | 326 | 97,02 |
| | Indigenous | 10 | 2,98 |

| | | | |
|--|-----------------|---|---|
| | Afro-Ecuadorian | 0 | 0 |
| | White | 0 | 0 |

Table 3. Population profile

In general, the results of the surveys conducted among the population are as follows:

| QUESTION | ANSWERS (%) | |
|--|-------------|----|
| | YES | NO |
| Do you know how to act in a disaster risk event, e.g., landslides, earthquakes, and ash falls? | 45 | 55 |
| Are you prepared to face an adverse event like landslides, earthquakes, or ash fall? | 30 | 70 |
| Have you participated in a Disaster Risk Management workshop? | 36 | 64 |
| Have you participated in a drill? | 39 | 61 |
| Has your family been affected by an adverse event? | 37 | 63 |
| Do you know that Chillanes is a territory vulnerable to adverse events? | 80 | 20 |
| Do you know about projects linked to risk management implemented in the territory? | 83 | 17 |
| Have you received training on Disaster Risk Management? | 29 | 71 |

Table 4. Results of the population surveys.

It should be noted that 88.7% of the total number of respondents answered that they live in a rural area, and concerning another question that refers to talks and training on risk management, the answers indicate that other external entities have received them but not local ones.

The study developed links the management of the GAD of Canton Chillanes in terms of disaster risk management, and the main novelty, according to the SWOT analysis, is that the weaknesses outweigh the strengths, finding that the lack of a specific Risk Management Unit has not allowed to effectively address emergencies arising from natural or anthropogenic events and even more knowing that this territory is surrounded by hills and mountains that have caused landslides around the main access roads, often leaving several populations incommunicado. Rosero¹⁵, in his study "Inclusion of Disaster Risk Management in the different levels of GAD

of Ecuador considering the relationship between the existing legal framework and traditional popular practices". This work aimed to plan actions for the GADs to implement DRM according to their competencies based on the Sendai Framework guidelines. The legal framework of our country and the traditional practices. This type of study strengthens GAD since it is essential to recover ancestral practices and insert them transversally into different activities. These risk mitigation and prevention criteria can be understood where the argument about resilience stands out, connoting that prevention behavior prevailed in the ancestral peoples. While it is true that the population, due to specific customs, has its forms and ways of prevention, they are not strengthened by technical criteria in most cases since local institutions such as the GAD have not developed their competencies effectively despite having an ordinance for the creation of the UGR; however, it has not yet been created despite its importance and urgency. Cobos & García¹⁶, in their study "Organizational Model for Disaster Risk Reduction in the San Sebastián parish belonging to the Chimbo canton," develops an organizational model that allows for an adequate approach for Disaster Risk Reduction in the San Sebastián parish of the Chimbo canton. The research was conducted because the parishes at the local level still fail to comply with the public policy proposed by the authorities linked to risk management; they do not develop the processes of knowledge on disaster management to be implemented by the parish authorities and its inhabitants through organizational models that are established in the Parish Commission for Emergencies (COPAE). A diagnosis of the parish's situation was carried out through a SWOT analysis concerning disaster risks.

These studies reveal a common denominator: the lack of attention to the organizational strengthening of the RCUs with specialized technicians in the area and the lack of instruments to carry out specific studies and contribute to the entities that visit each of the territories.

CONCLUSIONS

The territory is located in an area of high vulnerability to landslides. Despite the existing background, the municipal entity has not adequately strengthened risk management. The SWOT analysis reveals a low level of strengths (15%) and a high level of weaknesses (33%). Opportunities and threats represent 24% and 28%, respectively. The primary deficiency lies in the lack of personnel and the absence of the Risk Management Unit (UGR) in the Decentralized Autonomous Government (GAD). This situation is worrisome considering the territorial and population vulnerability, aggravated by specific socioeconomic indicators such as unemployment and deficiencies in providing essential services in most homes.

From the results obtained from the surveys conducted, it can be deduced that a high percentage of the resident population of Chillanes is aware that they live in an area with a considerable degree of vulnerability; however, despite being aware of this, around 55% of those surveyed indicated that they are not prepared to face any adverse event.

Implementing this proposal could improve decision-making in Risk Management by generating a restructuring at the organizational level. By designing a process-based management model, the human talent of the UGR and other institutional bodies will be able to act effectively in the face of adverse events in the territory. This could improve the response capacity and increase risk management's effectiveness.

Authors' contribution:

Carlos Fabian Ramirez conducted descriptive and documentary research, analyzing the population's perception of disaster risks in Chillanes Canton;

Luis Villacis Taco led the field data collection and the determination of a representative sample of the study population, thus contributing to obtaining accurate information,

Abelardo Paucar Camacho analyzed the information provided by those involved in the Risk Management of the Decentralized Autonomous Government of Chillanes, contributing to the understanding of the institutional reality.

Pablo Heredia Logroño and *Tania Arguello Montero* collaborated to identify institutional weaknesses, highlighting the lack of strengthening of the municipal entity's Risk Management Unit (UGR).

Josselyn Ganan García and *Tania Rea Hinojosa* contributed to the writing of the study, highlighting the importance of institutional intervention in vulnerable territories such as Cantón Chillanes and pointing out the need to improve risk management to protect the population.

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REFERENCES

1. ECLAC. Planning for disaster risk reduction in the framework of the 2030 Agenda for Sustainable Development; 2020.
2. ECLAC. Regional Observatory of Planning for Development. [Online]; 2020. Accessed July 15, 2022. Available at: <https://observatorioplanificacion.cepal.org/es/nota/la-planificacion-para-el-desarrollo-y-la-gestion-del-riesgo-de-desastres>.
3. Municipal Decentralized Autonomous Government of Canton Chillanes. [Online]; 2019. Available from: <https://www.chillanes.gob.ec/wp-content/uploads/2020/03/PDyOT-2016.pdf>.
4. Narváez L. Disaster Risk Management: A Process Based Approach Lima; 2009.
5. IDB. Indicadores de Riesgo de Desastre y de Gestión de Riesgos: Programa para América Latina y el Caribe: Ecuador: IDB; 2018.
6. United Nations. Sendai Framework. March 18, 2015...
7. Asamblea Nacional. COOTAD Quito: LEXIS; 2019
8. ECLAC. Theoretical Framework Statistical Data Disasters. [Online]; 2019. Accessed July 21, 2022. Available at: https://rtc-cea.cepal.org/sites/default/files/document/files/Marco-te%C3%B3rico-datos-estad%C3%ADsticas-desastres_0.pdf.
9. UNISDR. United Nations Office for Disaster Risk Reduction. [Online]; 2017. Accessed July 21, 2022. Available from: https://www.eird.org/americas/docs/54970_63661guadeorientacintcnica.pdf.
10. SNGRE. Guidelines for the governance of disaster risk management in the Autonomous Decentralized Municipal and Metropolitan Governments. First ed. Guayaquil: SNGRE; 2022.
11. Jerez D, Ramos R. Risk governance in Latin America and the political dimension of disasters. 2022.
12. Narváez L, Lavell A, Pérez G. Disaster Risk Management: A Process-Based Approach Peru; 2009.

13. Guzmán M. Latin American and Caribbean Institute of Planning. [Online]; 2007. Accessed July 29, 2022. Available at: https://www.cepal.org/sites/default/files/publication/files/7321/S0700685_es.pdf.
14. Siles R, Mondelo E. Tools and Techniques for the Management of PM4R Development Projects. [Online]; 2018. Accessed July 29, 2022. Available from: https://indesvirtual.iadb.org/file.php/1/PM4R/Guia%20de%20Aprendizaje%20PMA%20SPA.pdf?fbclid=IwAR0_17MRzWGU-xgLTa1HregQQYcDu4V8vVnAga7GbhPdR2dJ0QbezaNZ-ig.
15. Rosero Á. Inclusion of Disaster Risk Management in the different levels of GAD of Ecuador considering the relationship between the existing legal framework and traditional popular practices. [Online]; 2018. Available from: <https://repositorio.uasb.edu.ec/bitstream/10644/6238/1/T2669-MGRD-Romero-Inclusion.pdf>.
16. Karina C, Andreina G. Organizational model for disaster risk reduction in San Sebastián parish belonging to Chimbo canton. [Online]; 2020. Disponible en: <https://dspace.ueb.edu.ec/bitstream/123456789/3687/1/Tesis%20Modelo%20Organizacional%20para%20la%20Reduccion%20de%20riesgos%20de%20desastres%20en%20la%20parroquia%20San%20Sebastian%20pertenciente%20al%20canton%20Chimbo.pdf>.

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Additional information

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