

Social action to address the climate catastrophe of May 2024 in the Porto Alegre Metropolitan Region: developing a contingency plan to build socio-environmental resilience at the Filhos de Sepé settlement

Ação social no enfrentamento à catástrofe climática de maio de 2024 na Região Metropolitana de Porto Alegre: construção do plano de contingência do Assentamento Filhos de Sepé para a resiliência socioambiental

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ABSTRACT

Extreme weather events are a consequence of climate change, whose effects have become more frequent and severe, as has been observed in the Porto Alegre Metropolitan Region (PAMR). In this socio-biodiverse area, communal areas, such as settlements resulting from agrarian reform, have been severely affected. Against this backdrop, the aim is to analyse the social action involved in creating a contingency plan for the Filhos de Sepé settlement, taking into account the associated impacts and strategies adopted. The methodology involved fieldwork and the systematic analysis of the participatory contingency planning stages. The settlement demonstrated responsiveness and solidarity with other settlements and territories by implementing strategies such as community kitchens, collective sewing, support brigades, animal rescue, and native seedling production. This historical social organisation, based on popular organisation, enabled the creation of a participatory contingency plan in response to organised civil society, thereby contributing to the socio-environmental resilience of PAMR territories.

Keywords: Floods. Curricularisation of Extension Activities. Participatory Methodologies. Climate Change. Collective Territories.

RESUMO

Eventos climáticos extremos são decorrentes dos efeitos das mudanças climáticas, os quais vêm se tornando frequentes e severos, como aconteceu na Região Metropolitana de Porto Alegre (RMPPA). Nesse território sociobiodiverso, territórios coletivos, como os assentamentos de reforma agrária, foram drasticamente impactados. Nesse contexto, objetiva-se analisar a ação social no processo de construção do plano de contingência do Assentamento Filhos de Sepé, considerando os impactos e

estratégias adotados. A metodologia consistiu em trabalho de campo com sistematização e análise das etapas de construção participativa do plano de contingência. O assentamento mostrou sua capacidade responsiva e de solidariedade com os demais assentamentos e territórios, implementando estratégias de cozinhas solidárias, costura coletiva, brigadas de apoio, resgate animal e produção de mudas nativas. A organização social histórica, baseada na organização popular, permitiu a construção de um plano de contingência participativo como resposta da sociedade civil organizada, vindo a contribuir para a resiliência socioambiental dos territórios da RMPA.

Palavras-chave: Enchentes. Curricularização da extensão. Metodologias participativas. Mudanças climáticas. Territórios coletivos.

1 INTRODUCTION

Extreme weather events are a consequence of climate change, which has become increasingly severe in recent years, resulting in significant and growing impacts on societies, economies, and ecosystems. In the case of Rio Grande do Sul, the last few years have been characterised by a series of events that began in mid-2023 (Castanheira; Padilha, 2024). This sequence began in June 2023 when an extratropical cyclone hit the state, primarily impacting the Porto Alegre Metropolitan Region (PAMR) and areas close to the Serra Gaúcha and North Coast regions (Rückert; Vicente; Gomes, 2024).

In September of that year, the state experienced flooding in the Taquari River Valley, which was considered the greatest natural disaster in its history at the time. Then, in January 2024, severe storms hit PAMR and the Serra Gaúcha region again, resulting in fatalities, fallen trees, roof damage and blocked highways. These events culminated in the floods of May 2024, constituting the largest hydrological catastrophe ever recorded in Brazil in terms of extent.

Magalhães Filho *et al.* (2024) state that this extreme climatic event results from the interaction among three environmental dimensions: meteorological, geomorphological-hydrological, and anthropogenic. The meteorological situation was characterised by a critical combination of climatic factors, including the *El Niño* phenomenon, low-pressure areas, high temperatures, and humidity. These factors blocked cold fronts and concentrated instability over the state, resulting in extreme rainfall.

Moreover, the region's geomorphological and hydrological features, characterised by the confluence of the Jacuí, Taquari, and Caí rivers in areas with steep slopes, favour rapid runoff and mass landslides. As these watercourses approach the metropolitan area and Lake Guaíba, they slow down and overflow into floodplains, exacerbating the severity and duration of flooding (Magalhães Filho *et al.*, 2024).

Ultimately, human intervention turned a natural event into a situation of urban and social vulnerability. The disorderly occupation of floodplains, driven by population growth in the Jacuí Delta region and along the Guaíba River, greatly exacerbated the impact of the floods (Magalhães Filho *et al.*, 2024).

These three dimensions are well known to researchers and public managers, and demonstrate that the event could have been predicted and mitigated through preventive action and adaptation strategies. However, the lack of effective planning and institutions' structural unpreparedness highlight significant shortcomings in public management when it comes to climate emergencies. Magalhães Filho *et al.* (2024, p. 28) emphasise that:

Historically, the strategy to mitigate these [flood] risks has focused on implementing structural measures, such as dikes and walls. More recently, this has been supplemented by non-structural measures, including warning systems, monitoring and land-use regulation. However, in many cases, these measures either do not exist or are inadequate.

Rizzotto, Costa, and Lobato (2024) build on this analysis, highlighting governmental decisions that have exacerbated Rio Grande do Sul's vulnerability, including the relaxation of environmental regulations for dam construction and insufficient investment in the recovery of Porto Alegre's containment system, which has been compromised since the September 2023 floods. They also point to failure to comply with legislation concerning Permanent Protection Areas and Legal Reserves (Agroforestry Charter & Nature-Based Solutions, 2024). These issues revealed formal institutions' unpreparedness in the face of the region's increasingly frequent and intense extreme weather events.

Government action to address the floods occurred primarily during and after the climatic event, leaving few, if any, preventive measures in place. Emergency measures adopted by the federal and state governments included declaring a state of public calamity to release extraordinary resources, providing financial aid to families, mobilising the Armed Forces to provide logistical support, rescue victims, transport supplies, and distribute drinking water and food (Rizzotto; Costa; Lobato, 2024).

Alongside state action, Tilly (1978) defined that civil society played a central role in addressing the crisis through social mobilisation. Local and collective initiatives, which were often self-managed, responded swiftly to the humanitarian emergency. In several cities, community groups, churches, neighbourhood collectives, and social movements organised networks to donate food, clothing, mattresses and hygiene products, and set up temporary shelters and kitchens with the help of volunteers. These actions were made possible by social organisations' leading role in disaster response, which often act with greater agility and effectiveness than formal government bodies.

Updated data from the Civil Defence (2025) shows that the floods affected around 2.4 million people in Rio Grande do Sul, spanning 478 of the state's 497 municipalities (approximately 96%). There were 184 deaths, 806 injuries, and 25 people missing. During the flooding, around 600,000 people were displaced, with over 70,000 seeking shelter. According to Emater/Ascar (2024), 7,437 agrarian reform plots spanning 226 settlements were impacted in Rio Grande do Sul. These figures reveal the severity of the climatic disaster.

The series of extreme weather events that have hit Rio Grande do Sul since mid-2023 has exposed the state's institutions' vulnerability to disasters and emergencies, as well as the absence of effective public policies to prevent and manage climate risks. Considering the exposed social vulnerability and the actions taken, it is clear that overcoming disasters cannot be limited to government intervention. The various social actors must be valued and integrated into the reconstruction process and the building of climate resilience.

Dowbor *et al.* (2024) argue that including all stakeholders in the recovery process ensures that their needs and concerns are considered, resulting in more legitimate and effective responses. The authors also argue that "interacting and organising makes the community more resilient, increasing its chances of surviving, adapting to, and recovering from a catastrophic event". In this context, the concept of socio-environmental resilience emerges. This refers to the capacity of social and environmental systems to absorb and adapt to shocks, stress and changes while maintaining their structure and function (Berkes; Folke, 1998). Coutinho *et al.* (2020) state that territorial resilience involves water, energy, food, and socio-environmental security, all of which are considered within the Nexus+ approach. Socio-environmental security encompasses the protection and management of risks and threats affecting society and the environment, including safeguarding against extreme weather events that can trigger catastrophes.

Therefore, developing contingency plans to anticipate and mitigate climate risks is essential for building Rio Grande do Sul's socio-environmental resilience (Brazil, 2023). Social participation must be central to this process. Incorporating affected communities is essential to ensure that decisions are based on accurate, localised information and community involvement. Rizzotto, Costa, and Lobato (2024, p. 3) reinforce this idea:

Emergencies create chaos within the management system, requiring specific contingency plans for each event. At the same time, states and municipalities must develop disaster risk management plans that involve different sectors and members of society. These plans should not only focus on disaster preparedness and response, but also on preventing future risks and mitigating existing ones [...].

In this context, this article aims to analyse the social action involved in creating a contingency plan for extreme weather events in the Filhos de Sepé settlement in Viamão, considering the impacts and strategies adopted to build socio-environmental resilience in the metropolitan area.

In addition to this introduction, the article is organised into five sections. The second section presents the methodology. The third section presents the context of the Filhos de Sepé settlement, along with the diagnosis of the impacts of floods, particularly on this settlement. The fourth section describes how the settlement is organised during floods. The fifth section presents the policies, actions and social mobilisation within the settlement. Finally, this study ends with final considerations.

2 METHODOLOGY

The methodology involved fieldwork, systematisation and analysis of the stages involved in creating a contingency plan for PAMR settlements. This plan was developed by the Brazilian National Training Programme in Technical Assistance and Rural Extension for Agrarian Reform Settlements and Contributions to the 2030 Agenda (In Portuguese, *Programa Nacional de Formação em Assistência Técnica e Extensão Rural para Assentamentos de Reforma Agrária e Contribuições para a Agenda 2030 - ProforExt*) at the regional Universidade Federal do Rio Grande do Sul (UFRGS). ProforExt is a national programme developed in partnership with 17 higher education institutions, the Ministry of Agrarian Development and Family Agriculture (In Portuguese, Ministério do Desenvolvimento Agrário e Agricultura Familiar - MDA), the Instituto Nacional de Colonização e Reforma Agrária (Incra), and rural social movements. The programme aims to promote sustainable development in rural settlements, *quilombola* (a resident of a “*quilombo*” in Brazil) communities and indigenous communities by providing technical training, promoting agroecology, and offering rural assistance. The programme employs young people from settlements as local education agents (LEAs), who are community leaders trained to disseminate knowledge. The programme is also aligned with the United Nations Sustainable Development Goals (SDGs).

The stages for constructing contingency plans were as follows: a) Diagnosing the impact of floods on PAMR settlements; b) Producing a technical document to guide the construction of a contingency plan for settlements at risk; c) Presenting and discussing the document in the Filhos de Sepé settlement; d) Systematising and producing a contingency plan for the settlement.

Diagnosis was carried out between July and August 2024 using Google Forms. Thirty-two questions were developed and divided into three categories according to the socio-environmental resilience guidelines and security criteria proposed by Coutinho *et al.* (2020). These categories were: a) social security involving water and energy security; b) economic security involving food security; and c) socio-environmental security.

Young LEAs were responsible for coordinating diagnosis with the leaders of their settlements and establishing mobilisation strategies with settled families. Seventy-two responses were obtained from the following settlements: Filhos de Sepé, in the municipality of Viamão; Integração Gaúcha, in the municipality of Eldorado do Sul; Santa Rita de Cássia 2, in the municipality of Nova Santa Rita; Jânio Guedes, in the municipality of São Jerônimo; and 19 de Setembro, in the municipality of Guaíba. Diagnosis presented data from all the responses, as well as specific information from eight respondents from the Filhos de Sepé settlement.

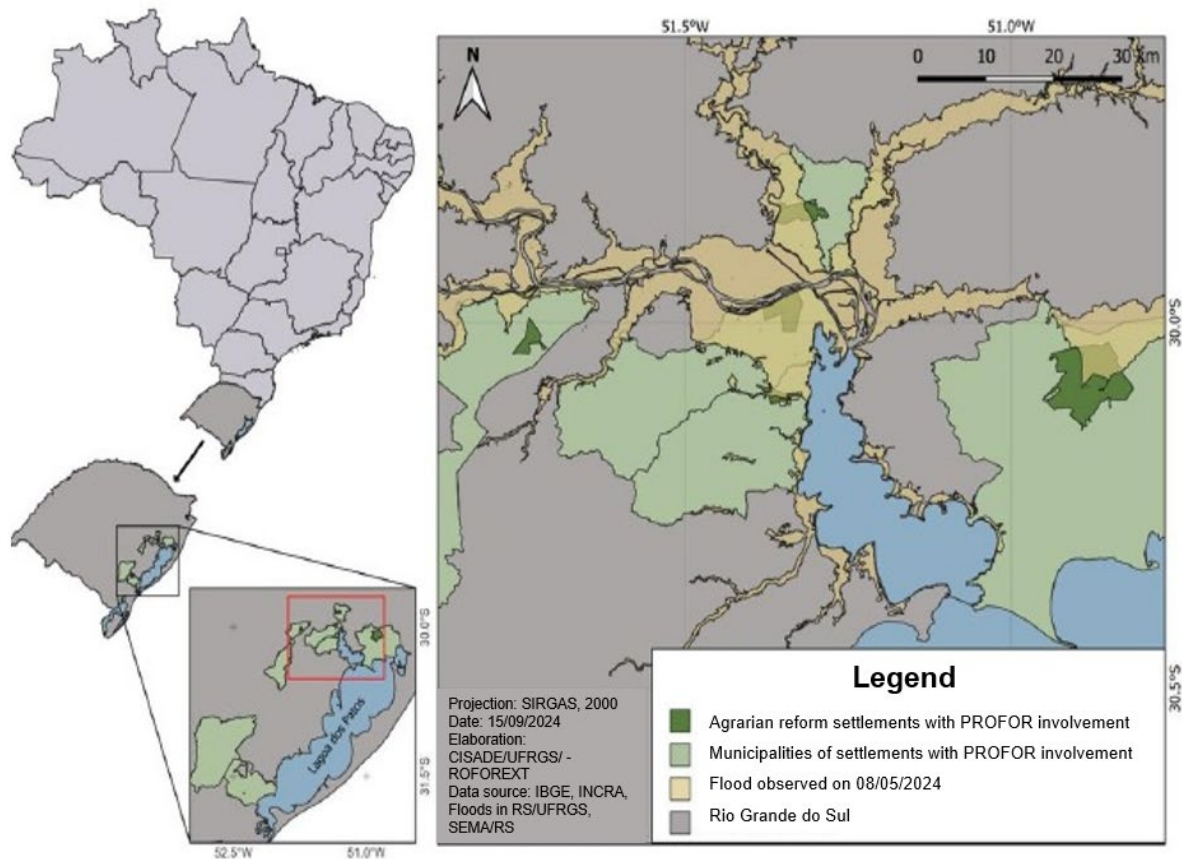


Figure 1 – Location of ProforExt settlements and flood zone resulting from the May 2024 floods in settlements in the Porto Alegre Metropolitan Region

Source: Prepared by Julia Ilha, 2024





The second stage, which took place between October 2024 and March 2025, involved producing a preliminary document that summarised the discussions and proposed actions for contingency plans, and presented a diagnosis. The results of this analysis were presented as part of undergraduate programmes in economics, international relations, and nutrition, the Postgraduate Programme in Rural Development, and an extension course. The interaction between ProforExt and teaching activities integrated the process of incorporating extension into the curriculum in the 2024-2 semester (Coelho-de-Souza *et al.*, 2025). Strengthening this process is one of ProforExt's objectives.

Training in climate emergencies, the SDGs, and metropolitan settlements brought together young LEAs, female farmers, settlement leaders, undergraduate and postgraduate students, professors, and researchers. Based on the diagnosis and proposals for the contingency plan developed within their respective disciplines, they worked through participatory methodologies (see Chart 1). The material was organised, resulting in the preliminary technical document. This document then served as the basis for the third stage, which was carried out in the Filhos de Sepé settlement.

In April 2025, the participatory construction of a contingency plan for the Filhos de Sepé settlement took place at an event aimed at discussing the preliminary technical document and providing feedback on the results to the participating families. This stage was organised by young LEAs and the Women of the Land Group, following the methodology presented in Chart 1. The fourth stage involved systematising event results and producing a contingency plan for the Filhos de Sepé settlement.

The article analysed social action at the various stages of creating a contingency plan for extreme weather events in the Filhos de Sepé settlement. The aim was to characterise the strategies adopted by the settlement and their contribution to building socio-environmental resilience in the metropolitan area.

Chart 1 – Participatory methodologies used in contingency plan construction for the Filhos de Sepé settlement

Events	Audiences	Questions
 <p>Training in climate emergencies, SDGs, and settlements in the Porto Alegre metropolitan region</p>	<p>Young local education agents, female farmers and settlement leaders, undergraduate and postgraduate students, professors, and researchers</p>	<p>What were the greatest impacts on the settlements during flooding?</p> <p>What were the greatest challenges for the settlements in the reconstruction process?</p> <p>What measures can be taken before, during, and after a new event?</p> 
 <p>Development of a contingency plan for climate emergencies</p>	<p>Families from the Filhos de Sepé settlement, young local education agents, undergraduate and postgraduate students, and professors</p>	<p>Do the results presented reflect the reality of the Filhos de Sepé settlement? What was missing? Or what does it not reflect?</p> <p>How was the organisation in the Filhos de Sepé settlement? Before? During? After?</p> <p>What measures can be taken in case of a new episode? Before? During? After?</p> 

Source: Prepared by the authors based on events promoted by ProforExt-UFRGS in November 2024 and April 2025

3 FILHOS DE SEPÉ SETTLEMENT CONTEXT, VIAMÃO, RS

The Filhos de Sepé settlement, located in the Águas Claras district of the municipality of Viamão in Rio Grande do Sul, represents a milestone in the state's land struggles and is a concrete example of collective socio-environmental resilience. The settlement was established in 1998 by activists from the Landless Workers' Movement (In Portuguese, *Movimento dos Trabalhadores Rurais Sem Terra* - MST). It is now home to 376 families from 115 municipalities in Rio Grande do Sul, which gives the community a rich diversity of knowledge, agricultural practices, and organisational experience.

The area, which covers 9,450 hectares and was previously occupied by eucalyptus monocultures (Diel, 2011), underwent a process of occupation and territorial reconstruction. This involved environmental recovery and the implementation of agroecological practices as a strategy of resistance and sustainable production. The transformation of a degraded area into a productive and diverse territory was a collective undertaking by the settled families. Today, they maintain a wide variety of productions, notably the cultivation of agroecological rice on approximately 1,600 hectares annually, as well as vegetables, fruits, dairy cattle and family-run agro-industrial products such as dairy goods, bread, pasta, honey, jams, and sausages (Diel, 2011).

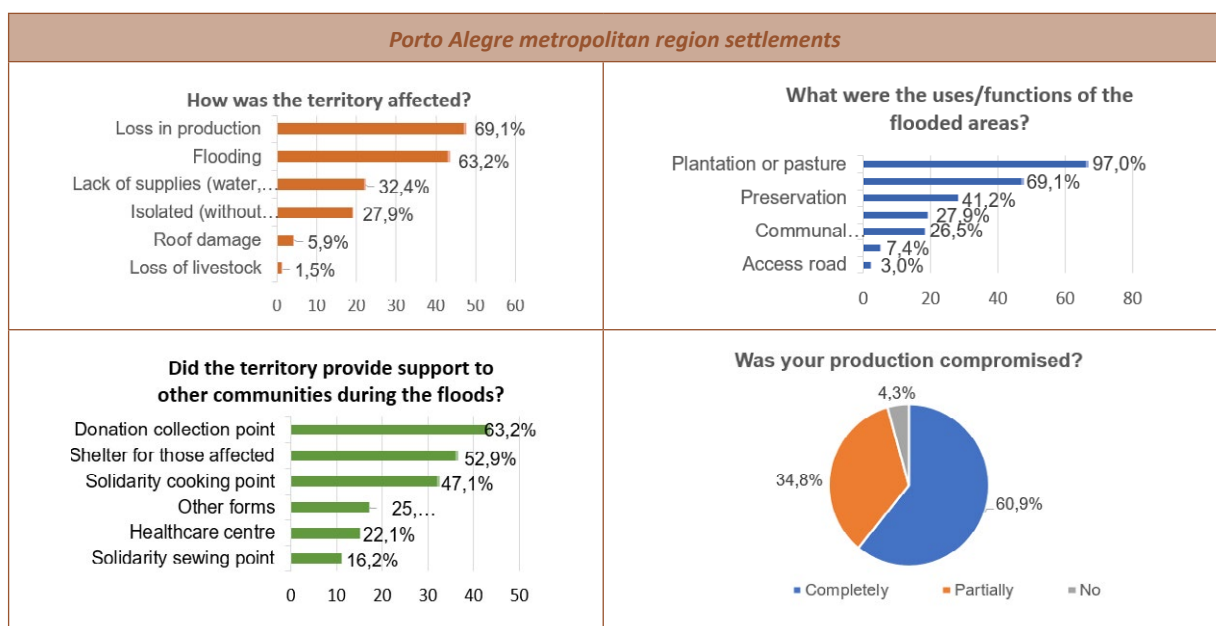
The settlement's history is characterised by experiences of self-management, solidarity and the development of community infrastructure (Bogni, 2020; Preiss, 2017). These factors have strengthened internal ties and improved the community's ability to respond to crises. Having prior experience of situations such as the ongoing processes of organisational and political training promoted by the MST, as well as the current situation with the Covid-19 pandemic, was crucial in developing a solid base of mutual support. This support is fundamental in critical episodes such as the 2024 climate catastrophe.

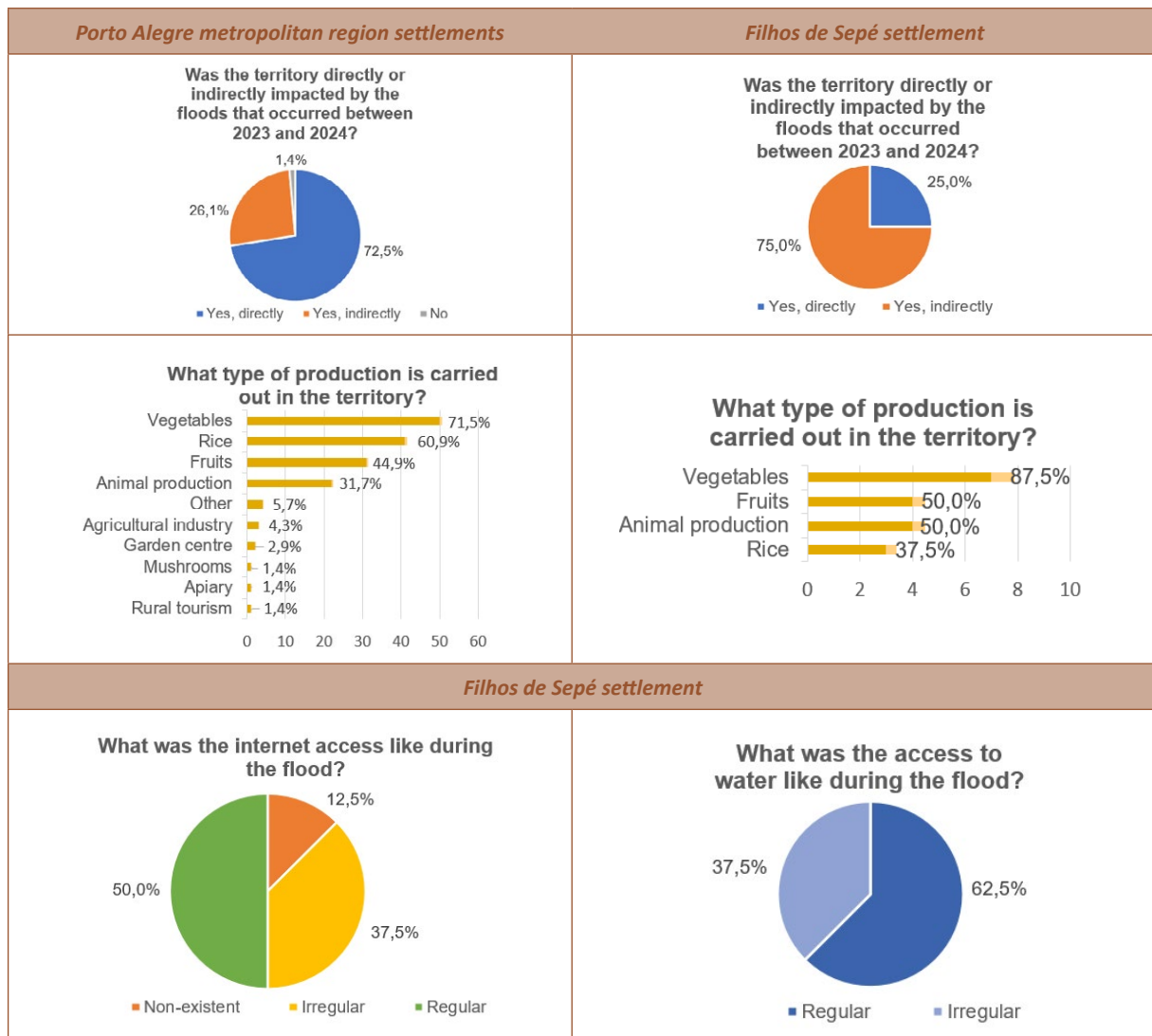
The section below provides an overview of the consequences of flooding in the Filhos de Sepé settlement, as well as the actions taken during and after the floods. It also characterises the settlement's contribution to the territory's socio-environmental resilience.

3.1 DIAGNOSIS OF THE IMPACT OF FLOODING IN SETTLEMENTS

Diagnosis presents the results relating to the settlements participating in ProforExt. Chart 2 shows the details for the Filhos de Sepé settlement. Of the 72 responses from families interviewed, the results demonstrate that 63% were affected by flooding, 92% experienced crop losses, and 69% suffered impacts to their homes.

Chart 2 – Graphical representation of the results of the flood impact assessment carried out in the Filhos de Sepé settlement. Viamão, RS





Source: Prepared by the authors based on data from the ProforExt Regional UFRGS diagnosis

The flood caused partial losses in agricultural production for 75% of families in the Filhos de Sepé settlement. This suggests that, despite being affected, they were still able to preserve some of their production. Conversely, 25% of respondents reported total losses, suggesting that all families interviewed experienced some impact on their production.

Vegetable production was the type most affected by the settlement, followed by fruit, animal, and milk production, and finally rice production. The fact that vegetables were the most affected crop reveals their high vulnerability to extreme weather events. These crops are generally more sensitive, with a short cycle, low resistance to flooding and natural disasters, and a high dependency on daily management. Vegetable gardens, which are often found in floodplain areas or near homes, were severely damaged by the heavy rainfall. This had a direct impact on the subsistence and income generation of settled families.

Losses in fruit growing and livestock production suggest that activities with longer cycles and more intensive structural investments were also significantly damaged, despite rice production being a traditional flooded area crop. Thus, the data reveal that the floods affected different production systems in different ways.

In terms of basic infrastructure, 37.5% of families in the Filhos de Sepé settlement experienced irregular access to drinking water during the crisis period, highlighting a serious water security problem.

Contamination of water sources and damage to supply structures pose a direct threat to public health, particularly in an emergency. This data relates to the daily lives of people who depend on water for consumption, hygiene, animal care, and maintaining productive activities. Most of these activities are agroecological and require constant irrigation.

Meanwhile, analysis of internet access shows that 50% of families had a regular connection, while the other half experienced difficulties, with 37.5% reporting irregular connections and 12.5% being completely disconnected. Based on the presented data, it can be concluded that the Filhos de Sepé settlement was partially impacted, affecting agricultural production, access to drinking water and internet access. This highlights the several dimensions of vulnerability faced by the settled families. At the same time, the settlement was crucial in supporting other settlements and territories, as will be seen in the following sections.

4 FILHOS DE SEPÉ SETTLEMENT ORGANISATION DURING THE FLOODS

The Filhos de Sepé settlement implemented several key initiatives during the climate crisis, which can be categorised into five main areas: community kitchen; sewing and clothing preparation for donation; animal rescue; support brigades; and native seedling production and planting.

4.1 COMMUNITY KITCHEN

The immediate response to the need for food was organised through the establishment of a community kitchen, which went through three distinct phases of implementation: structuring, collecting food, and distributing meals. The mobilisation of volunteers to contribute to the kitchen work was achieved during the initial structuring phase via WhatsApp groups. The Cooperative of Organic Producers of Agrarian Reform of Viamão (In Portuguese, *Cooperativa dos Produtores Orgânicos de Reforma Agrária de Viamão*) gymnasium was adapted as a central production space. Families provided the equipment and household utensils, including pots, stoves, cookers, gas, and firewood.

The second stage focused on food procurement, starting with the settlement's own resources. Families donated some of their produce, including perishable items such as sweet potatoes, cassava, vegetables, pulses and fruit, as well as non-perishable goods from cooperative stocks, particularly beans and rice. As the situation worsened and continued, external food donations from various supporters supplemented this effort.

The settlement began providing food aid to critical areas such as the settlements in Eldorado do Sul that had been completely flooded. In these extreme cases, Civil Police helicopters were used to carry out the initial distribution, transporting meals to locations where families were stranded. The displaced families were soon organised in more accessible locations so they could receive the donations.

Over time, the distribution system has become more complex. Initially, the meals were intended for displaced families who had settled and for volunteers involved in rescue operations. Vulnerable urban communities, such as families in the Mathias Velho neighbourhood in Canoas, have been included in the solidarity network as it has expanded over time. Unfortunately, the community kitchens in this neighbourhood were flooded. These kitchens were already supported by the Food Acquisition Programme. PAMR settlements made weekly food deliveries to these kitchens, which benefited families facing food insecurity. The youth organisation *Levante Popular da Juventude* played a central role in the logistics of receiving and distributing food to shelters housing displaced families in this area. Monteiro (2025) described that:

Community kitchens have a broader role than simply producing food. They also provide spaces for sharing and support between volunteers and the community. It is through building these bonds that opportunities for other initiatives are created, such as income generation, education through literacy classes and pre-university courses, and cultural activities. These social processes enable the promotion of human, social and financial dignity and autonomy. Furthermore, they bring urban and rural women workers closer together (including peasant women who produce and supply these organisations with healthy products).

In this case, the logistics of distributing the aid were supported by donations, particularly contributions via *PIX Solidário* — a mechanism for receiving financial resources through *PIX* (a real-time instant payment system developed by the Central Bank of Brazil) transactions — and by the hard work of many women. One of the reported challenges was the lack of involvement from more families, which led to a small number of people being overloaded with work.

In June 2024, as soon as the water levels at the Integração Gaúcha settlement in Eldorado do Sul had receded, a space was cleaned and organised. The settlement had previously depended on donated meals. Once conditions were appropriate, the kitchen was relocated to Eldorado do Sul, which made food production and distribution more logistically efficient. From then on, meal preparation took place in a local kitchen, replacing the production that had previously taken place at the Filhos de Sepé settlement in Viamão.

4.2 INITIATIVES FOR SEWING AND PREPARING CLOTHES FOR DONATION

A support network was set up to complement the efforts of the community kitchens, and this network was based on sewing initiatives. The process began with the collection and sorting of clothing donations, with items in good condition being separated for direct distribution. Damaged or unusable items were transformed into new products, primarily underwear and quilts.

The “Witches’ Workshop” initiative arose from conviviality in community kitchens, where a group of women started making underwear from available fabric offcuts (Canzarolli, 2024). Therefore, alongside the community kitchen, this workshop empowered women to produce items with dignity and support, particularly through sewing for their peers during times of crisis. These efforts fostered the integration of women from both rural and urban areas. At the same time, a textile recycling programme was developed in collaboration with religious groups, transforming unusable clothing into quilts and pet beds.

Developed under adverse conditions, these actions demonstrated the community’s capacity for self-organisation and creativity in transforming limited resources into concrete solutions to immediate problems. The fact that these initiatives were predominantly female-led highlighted women’s central role in building networks of solidarity and care during the climate emergency.

4.3 ANIMAL RESCUE

Excessive rainfall caused flooding in the low-lying areas in the Filhos de Sepé settlement, endangering the livestock. In order to protect the animals from the flood and ensure they had enough to eat, families who lived on higher ground arranged themselves to provide shelter for the cattle and horses. According to reports from participants at the meeting in the settlement, some of these areas were previously considered unsuitable for food production or as pasture because they were dominated by signal grass (*Brachiaria* spp.), an invasive species that cattle do not find very palatable. However, due to food restrictions, the animals started eating this grass, which helped to naturally control the invasive species.

In Eldorado do Sul's other settlements, rescuing horses, cattle, and companion animals also required human intervention, involving the use of individual boats or those organised by Civil Defence and other environmental agencies. Despite rescue efforts, significant numbers of animals were lost in all settlements due to flooding, as well as difficulties in sheltering them and providing them with veterinary care. While some animals were relocated to higher ground, many were lost due to limited space, food and adequate veterinary resources.

The initiatives in these settlements included creating publicity pages for rescues, restructuring the animals' diets upon their return and caring for those that returned ill. Many animals fell ill due to prolonged contact with contaminated floodwater and excessive humidity. To aid their recovery, natural remedies such as homoeopathy were employed alongside specific diets.

4.4 SUPPORT BRIGADES FOR OTHER AFFECTED SETTLEMENTS

Within the MST's organisational structure, a "brigade" is a group responsible for specific actions in areas such as health, education, youth agitation, propaganda, and security. This organisational structure was mobilised during the response to the climate catastrophe to create emergency brigades composed of families who had set up camps in various regions of southern Brazil. These brigades began acting directly in territories affected by floods, initially carrying out cleaning activities, providing health support and organising food supplies, once the waters had receded.

Subsequently, brigades were formed to restore productive areas through activities such as planting trees, recovering soil, resuming crop production and restructuring productive spaces such as greenhouses and garden beds. In Eldorado do Sul, these efforts were backed by institutional partnerships, including the special agronomy course offered by the Brazilian National Programme for Education in Agrarian Reform (In Portuguese, *Agronomia do Programa Nacional de Educação na Reforma Agrária*) at the Universidade Federal da Fronteira Sul, Pontão campus.

During this time, the Filhos de Sepé community stood out as active collaborators in the brigades, sending members to support the settlements hit hardest by the disaster. The Filhos de Sepé families contributed to clean-up brigades and reorganisation of productive areas, as well as to care and health promotion activities, providing psychological support, and distributing food and medicine. Such initiatives foster solidarity within agrarian reform communities and emphasise the pivotal role of collective organisation in coping with, caring for, and rebuilding following extreme events.

4.5 NATIVE SPECIES SEEDLING PRODUCTION AND PLANTING

The Women of the Land Centre is a women-led initiative from the Filhos de Sepé settlement. It was created to promote the recovery of degraded areas and strengthen environmental conservation practices. In the context of addressing the impacts of climate change, the initiative involves producing seedlings of native and endangered species. This contributes to the conservation of biodiversity and the restoration of ecosystems.

The main activities carried out include seed collection, seedling production and planting in degraded areas, both within and outside the settlement. The project prioritises endangered species in order to restore ecosystems and form ecological corridors. Women manage the entire process, thereby reinforcing their leading role in sustainability practices.

In addition to increasing the amount of vegetation and improving the condition of ecosystems, such as soil conservation, water resources and air quality, the Women of the Land Centre is a strategy for

strengthening the community and generating income. This reaffirms the importance of collective organisation in building more resilient territories.

Thus, the settlement's resilience in the face of floods was no accident, but rather a trajectory that has been built from the outset on the principles of solidarity, sustainability, and popular organisation.

5 COPING STRATEGIES: MEASURES FOR THE CONTINGENCY PLAN IN THE FILHOS DE SEPÉ SETTLEMENT, VIAMÃO

Rizzotto, Costa, and Lobato (2024) pointed out that the floods that devastated Rio Grande do Sul in 2024 forcefully demonstrated the need to develop comprehensive and well-structured contingency plans. They must operate at different scales simultaneously, taking into account the particularities of each territory and community at both the state and local levels. In this context, the ProforExt project is an important initiative for the participatory development of these plans in the territories. It brings together a variety of stakeholders: LEAs, interns, professors, and UFRGS undergraduate and postgraduate students, as well as leaders and families from the settlements. Integrating academic knowledge with local expertise was fundamental to formulating proposals that adequately addressed the community's specific needs. Below are the proposals resulting from this process of dialogue and collaboration.

While the strategies for the Filhos de Sepé settlement are already at an advanced stage of consolidation, plans for other settlements in the region are still being developed.

5.1 GENERAL PROPOSALS FOR ADDRESSING CLIMATE EMERGENCIES

5.1.1 PREVENTION PHASE (BEFORE THE EXTREME WEATHER EVENT)

The preventative approach is long-term and based on three main pillars. The first pillar concerns territorial and environmental planning. This includes conducting a meticulous topographic survey to identify vulnerable areas and define safe escape routes. In addition, a continuous community environmental education programme is proposed, focusing specifically on preventing and responding to climate disasters. This programme aims to empower residents to take action from the identification of risks to post-emergency actions. Ongoing environmental education is key to building long-term resilience. This includes training programmes specifically designed for children and young people, which address sustainable practices and climate risk management. These programmes are complemented by periodic events that maintain the visibility of the topic within the community and enable the contingency plan to be updated regularly.

The second pillar involves the development of preventive infrastructure. Specific actions include implementing natural barriers made from riparian vegetation and physical barriers to mitigate the effects of flash floods. A fundamental strategy for preserving heirloom varieties and the community's genetic and cultural heritage is the construction of seed banks in elevated and protected locations. Elevated structures such as stilt houses and mezzanines are intended for the safe storage of food, animal feed, and essential equipment, complementing these actions.

The third preventive component relates to alert systems. The proposal emphasises the need for effective and accessible mechanisms, including systems that are independent of an internet connection. These systems could include community radios and would ensure that alerts reach the entire population, even in situations where conventional communications have failed. This demand is especially directed at competent public bodies.

5.1.2 RESPONSE PHASE (DURING THE CLIMATE EMERGENCY)

When a climate emergency occurs, action protocols must be activated immediately. Community kitchens that have been set up in advance should be operational quickly, alongside the distribution of emergency kits containing non-perishable food, clothing, and basic medicines. Escape routes mapped during the preventive phase are crucial for the safe evacuation of people, animals, and agricultural machinery.

The previously trained local brigades now play a central role in rescue operations and the complex logistics of distributing donations. Protecting production systems during the emergency requires strategic decision-making, with the highest priority given to safeguarding human and animal life. To this end, shelter locations for people and animals that have been identified in advance are essential, as are strategic stocks of easily prepared foods such as dehydrated soups and pre-cooked grains that can be quickly mobilised.

5.1.3 RECOVERY PHASE (POST-EMERGENCY)

Now that the most acute phase of the crisis is over, clean-up, reconstruction and recovery efforts can begin. Organised community efforts to clean and repair damaged infrastructure, such as bridges, roads, housing and productive spaces, are a practical solution and an important way of strengthening community ties. At the same time, political mobilisation for public reparations policies is essential, particularly with regard to agricultural credit lines with reduced interest rates and accessible climate insurance, as these can mitigate family farmers' economic losses.

Effective reconstruction efforts require intersectoral coordination between different levels of government (federal, state and municipal) and community organisations. In the agricultural sector, post-disaster agroecological recovery should include analysing and restoring soils, agrobiodiversity and production systems, and providing ongoing technical assistance to help farmers adapt to new climatic patterns.

5.2 PUBLIC POLICIES, SUPPORT DURING THE RECOVERY PHASE, AND SOCIAL ACTION

A state of public calamity was declared in 78 municipalities in May 2024, and a state of emergency was declared in 340. This decision was made based on the affected areas, damages incurred, and the intensity of the disaster, according to the Brazilian Classification and Coding of Disasters (Civil Defence, 2021). The municipality of Viamão has been classified as being in a state of emergency. This situation was identified at the settlement meeting as an obstacle to accessing public policies and calls for proposals involving mixed initiatives with the third sector (Fundação Grupo Boticário, 2025).

Municipalities that have been declared to be in a state of public calamity have greater access to financial resources and specific benefits, such as the FGTS Calamity Withdrawal. They also receive priority access to humanitarian aid and infrastructure reconstruction compared to municipalities that have been declared to be in a state of emergency. While both can receive government support and access support policies, classification as a state of public calamity influences access priority (Rio Grande do Sul, 2024b).

According to official documents on the impact of floods on rural families (Emater/Ascar, 2024), 206,000 rural properties were affected, including 7,437 plots distributed across 226 settlements. However, no detailed information was provided on the settlements affected. Meanwhile, the municipality of Viamão reported that Itapuã was the area worst affected, making no mention of Águas Claras, home to the Filhos

de Sepé settlement (GZH, 2024). The municipality received 71 reconstruction grants, each worth R\$ 5,100.00 (*reais* is Brazil's currency) (Viamão, 2025), but none were allocated to families in the settlement.

Chart 3 presents the main actions of the settlement's contingency plan. Despite the impact on productive areas and the loss of livestock, particularly in lower-lying areas, and the absence of a pre-defined structure and organisation for responding to climate disasters, the MST's organic nature, and experience accumulated through solidarity actions, such as those during the pandemic and in the struggle for land, were fundamental to the swift and effective response to the catastrophe. Dowbor *et al.* (2024) mentioned that the participatory construction of a contingency plan strengthened collective spaces for sharing experiences, enabling families to process their losses and pain. This strengthened collective experiences, thus enabling involvement and coordination with actions that have the potential to be more legitimate and effective.

Chart 3 – Specific areas of action in the contingency plan for the Filhos de Sepé settlement

<i>Specific areas of action in the contingency plan for the Filhos de Sepé settlement</i>
Agriculture: Key aspects of the preventative phase include constructing natural barriers and strategically storing seeds in elevated locations. Once they have emerged, the focus shifts to protecting agricultural equipment in safe areas. During the post-emergence period, the priority should be to replant with species that are better adapted to extreme weather conditions, thereby ensuring greater future resilience.
Production structures: Preventative measures include raising electrical installations and machinery, and constructing warehouses with elevated mezzanines and/or stilt-house models. Following an emergency, it is essential to undertake community clean-up and structural repair efforts to enable rapid restructuring.
Animal protection: Prior preparation involves identifying elevated pastures and building up feed reserves. In an emergency, temporarily relocating animals to higher pastures is a practical solution. Later on, access to veterinary services and herd replacement programmes becomes a priority.
Access to credit and insurance: Prior legal advice when setting up agricultural, residential and equipment insurance contracts is an essential preventative measure. After disasters, actively seeking specific credit lines for reconstruction can significantly aid the recovery of family-run production units.
Guaranteeing basic security: Throughout all phases, it is essential to ensure the population's continuous access to basic elements of survival and communication. This includes alternative drinking water supply systems (e.g., wells and protected cisterns), strategic community stockpiles of food and clothing, and solutions for maintaining energy and communication, such as electric generators and community radios, especially important in situations of interruption of conventional services.

Source: ProforExt-UFRGS Project data, 2025

The plan was developed based on the community's lived experience of the settlement, and was firmly rooted in traditional knowledge and community organisation. Key challenges included the process of internalisation within a large-population settlement, while its strengths lay in its organic organisation and articulation across different sectors. Furthermore, the need for technical support and public resources became evident, highlighting the need for technicians with diverse expertise in the planning and monitoring stages of the plan. Technical assistance is required during the response period to ensure that actions are carried out in accordance with the plan's guidelines, particularly regarding the construction of shelters for farm animals. This is one area where losses could have been minimised. Support is needed during the recovery period to help resume agricultural processes.

Therefore, contingency plans for collective territories must be integrated into a state plan involving municipal, state, and federal authorities. This plan must coherently coordinate actions in Civil Defence, social assistance, health and agriculture, and support and strengthen the plans for these territories. A key lesson from developing the settlement plan is that resilience requires constant preparation, adequate infrastructure, access to resources, and the capacity to respond to disasters.

From a regional perspective, the settlement was able to create a support network for its own families and assist those in other settlements that were more severely affected, such as the Integração Gaúcha settlement in Eldorado do Sul, which was completely flooded. The settlement also provided meals for families in urban areas displaced by climate change. Hence, the settlement emerged as a driving force in responding to the extreme weather event. Despite its own challenges, its ability to contribute to the safeguarding and rebuilding of other territories underscores the pivotal role of Filhos de Sepé in the solidarity network between settlements and other regions, emphasising its contribution to PAMR's socio-environmental resilience.

Furthermore, the PAMR settlement's socio-environmental resilience lies in promoting water, energy and food security through ecosystem services. Coelho-de-Souza *et al.* (2024) express that interrelationships between urban and rural areas characterised by the conservation of native ecosystems have the capacity to unite regions, thereby strengthening resilience in the face of climate emergencies.

6 FINAL CONSIDERATIONS

The floods that affected Rio Grande do Sul in 2024 put the resilience of its settlements to the test, revealing their collective strength as well as the vulnerabilities caused by the lack of effective public policies. In the Filhos de Sepé settlement, decades of social organisation translated into concrete acts of solidarity in response to the catastrophe, as evidenced by the community kitchens, sewing workshops, garden centre and engagement in building a contingency plan. These initiatives are the result of years of social mobilisation that have enabled the development of a collective vision for caring for the territory.

At the same time, this extreme weather event highlighted that, without institutional support, even collective territories are subject to structural limitations. This means the state must recognise the strategic role of family farming in building resilient territories, guarantee access to credit and agricultural insurance, and establish permanent mechanisms for popular participation in creating and implementing contingency plans for these territories. Therefore, participatory contingency planning is an essential strategy for civil society when it comes to addressing climate disasters.

Building socio-environmental resilience in territories requires the integration of all sectors through intersectoral and participatory processes. In this context, organised social movements, such as the Filhos de Sepé settlement, have demonstrated an exceptional capacity to bolster the resilience of their own territory and that of other settlements, as well as that of PAMR.

The results of the actions taken under the contingency plan, such as crop losses, animal suffering, the need to safeguard seeds, and the construction of natural barriers, highlight the need to address the impact of predominantly rural flooding. However, their contribution to PAMR's resilience lies in the complementarity between rural and urban areas. These territories are based on a process of social mobilisation that strengthens a collective identity and produces ecosystem services that maintain socio-environmental resilience. They demonstrate a particular ability to adapt to and mitigate the effects of extreme weather events in PAMR.

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