

## **The tragedy of the highlands Serrana region in the State of Rio de Janeiro in 2011: looking for answers**

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### **1 - Introduction**

The natural disaster that took place in the highlands Serrana region in the Brazilian State of Rio de Janeiro, on January 12<sup>th</sup> and 13<sup>th</sup> in 2011, when heavy rain triggered flooding and landslides in seven counties, was considered the country's biggest climatic and geotechnical catastrophe. Classified by the UN as the 8<sup>th</sup> largest landslide occurred worldwide in the last 100 years, the disaster was compared, in size and damage, to other major disasters, like the one that devastated the region of Blumenau-Itajai, in the Brazilian State of Santa Catarina, in 2008, and Hurricane Katrina, which destroyed the city of New Orleans, USA, in 2005.

Although dealing annually with some landslides and floods, the region had never faced a situation of this gravity where entire neighborhoods were covered in a matter of seconds. After a state of emergency and public disaster was declared, a great support network was established, composed of local public agencies, state and federal agencies, private organizations and volunteers.

Despite this effort, the losses were enormous: more than 900 dead, 350 missing and thousands left homeless, in addition to serious damage to infrastructure, as well as to the economy and geography of the affected region.

Serious doubts remained: What caused the disaster that occurred in these great proportions and, particularly, what factors led to so many casualties? What was the quality of the immediate response to the disaster by the responsible agencies? Who commanded the operation? How did the actors articulate and which were the difficulties faced in this process? Here are important issues for governments to define, more clearly, a national risk management and crisis policy.

This case study is intended to arouse discussion about the variables and actors who influenced the process of crisis management, contextualizing the disaster scenario in the region and responding to natural disasters, rebuilding, especially the process of immediate response to tragedy given by the agencies involved. Used as sources of information, statements given by authorities, experts and victims, as well as data provided by the press and reports, also studies on monitoring, preventing and responding to natural disasters.

## 2 - The context of the highlands

Boasting beautiful mountains, mild climate, fertile soil and many rivers, the occupation of the highland serrana region of Rio de Janeiro began in the nineteenth century with the installation of settlers originating especially from Switzerland and Germany. Petropolis was also occupied by the Portuguese Court since 1845, having been the capital of Brazil from 1893 to 1902.

These characteristics have made their cities major touristic sights, over the years, with the installation of an extensive network of hotels and restaurants. An industrial sector was also developed and today it's a production center of fashion, and has strong presence in the metal-mechanic sector, factors that, together with agriculture, boosted the economy of the region.

Despite having favorable economic conditions, the region has been characterized by a large natural vulnerability: located in the *Serra do Mar*, a region formed by rocks with a thin layer of earth and covered by the Atlantic Forest, with steep slopes and intense rainfall in the summer, features that generate unstable soils and prone to landslides.

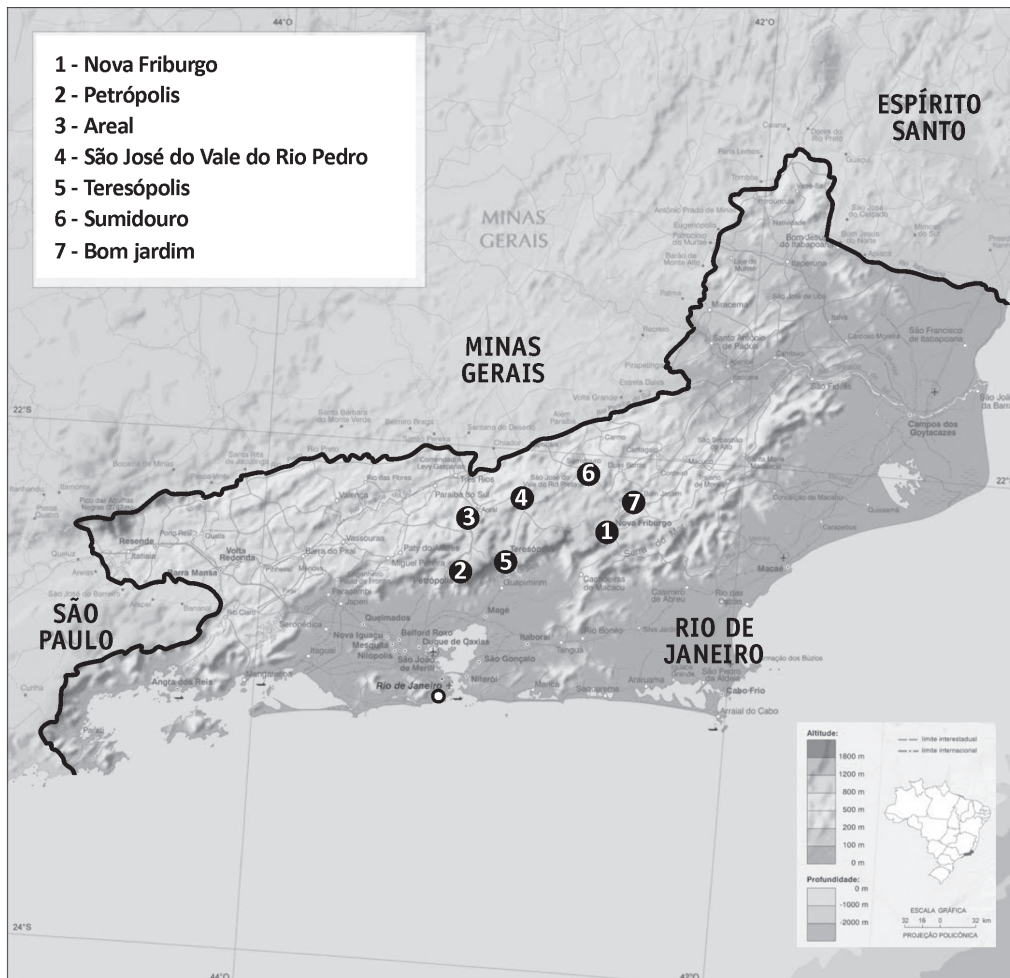
Natural conditions added up to the human factor. For years the hillsides and river banks have been subject to deforestation and illegal occupations, which further aggravated the vulnerability of the area, causing heavy rain, common in summer, provoke often erosion, flooding and landslides. The Regional Council River Engineering (CREA-RJ) had warned two years ago, on the dangers of building in hazardous areas in the region.

The press reported that partial withdrawals between 2008 and 2009, conducted in three major cities in the region, pointed out that about 42 thousands residents lived in 230 vulnerable areas, where 10 thousands houses were built.

## 3 - The disaster: an overview

Between the evening of January 11<sup>th</sup>, 2011, Tuesday, and the dawn of the 12<sup>th</sup>, Wednesday, intensive rain fell on the highland Serrana region

of the State of Rio de Janeiro, hardest hit were the towns of Nova Friburgo, Petrópolis, Teresópolis, Bom Jardim, São José do Vale do Rio Preto, Sumidouro and Areal, in an estimated area of 2,300 km<sup>2</sup>, where over 713,000 inhabitants live.



Source: About image in IBGE school maps.

The National Institute of Meteorology (Inmet) recorded an index of 130 mm of rainfall per day, when the normal for the period is 60 mm. According to experts, in some points, the index must have exceeded 200 mm. In 24 hours, it rained half of the expected for the month.

The Inmet issued a Special Weather Warning at 4:23pm on January, 11<sup>th</sup> for the State Civil Defense, aiming at issuing a warning to municipalities. The National Institute for Space Research (INPE) also released on the same day at 3 pm, a report to alert to risks of landslides in the mountainous region of the State of Rio de Janeiro. The State Civil Defense, however, followed the recommendations of the Department of Meteorology of the State of Rio (Simerj), which did not foresee a storm.

Criticized for not giving importance to the alarm raised by these agencies, the governor of Rio de Janeiro complained to federal

authorities about the characteristics of the alarm: “The State Civil Defense passed the cities the same warning that they receive all days of moderate to heavy rain. What can you interpret of moderate to heavy rainfall, if every time you receive the same report? “

According to the description of specialists, heavy rains, lasting for 32 hours caused flooding of rivers, forming waves that swept rocks and houses. Landslides hit the hills on both occupied and sparsely inhabited areas. The rain uprooted secular trees and moved rocks, which fell into small rivers, creating dams. These dams burst, forming waves of mud, which explains the power that pushed the barriers.



Source: Agência Estado

The geological report prepared by the Department of Mineral Resources (DRM) of the State of Rio de Janeiro after the disaster, entitled

“Highland Mega disaster,” said the avalanches of soil, going down the hills reached 180 km/h and each body, that moved, plummeted 1 km/ 20 seconds. According to the document, there were five types of landslides: two of them had never occurred in the region before. Only in Nova Friburgo, there were 3000 landslides.

Entire regions were covered by mud, hundreds of homes were swept away by landslides and dozens of people were buried. The magnitude of the tragedy caused the change of the geography of the affected area: rivers, streams and canals have changed their courses, roads, bridges and streets disappeared.

The commander of the Fire Department, comparing the disaster with the flooding that hit Australia in the same period, summed up well what happened: “In Australia there was a flood. Here there was flood, landslides, collapses and inundations, all at the same time. I only knew the word cataclysm in the dictionary. For the first time I saw what it means.”

The region was without power, drinking water and communications of any kind. Public buildings and hospitals were damaged. Rescue teams operated without the use of cell phones, radios or satellites.



Source: Folhapress

The balance of the disaster victims of the mountain state, published on March 23<sup>rd</sup>, recorded 905 dead, 345 missing, 34,600 left homeless or displaced in the region. Among the dead were firefighters who were buried when seeking access to areas with the occurrence of landslides.

The cities of Nova Friburgo, Teresópolis and Petrópolis registered the largest number of deaths, in the first town the phenomenon focused more on the urban area and the remainder in the rural area. This finding led the president of DRM to say that the tragedy has

changed the criteria for risk area in the country: it was no longer possible to consider only the urban areas. Rural areas should also be classified as vulnerable to risks.

The region's economy, which main sector is of services, especially related to tourism, trade, industry and agriculture, was hit hard. The total of the financial losses, including losses in these sectors and in infrastructure, has not yet been finalized, but it is estimated that it will take the region years to recover.

To address this tragedy of such dimensions, an extensive network of assistance, comprised of government officials, private companies, nongovernmental organizations and volunteers was formed.

The media monitored and reported in detail all phases of the relief, including testimony and analysis that raised factors that could have contributed to the scale of the tragedy.

In order to evaluate the responsibility of government in the prevention and management of the disaster, it was also established by the Legislature of the State of Rio de Janeiro a Parliamentary Commission of Investigation on March 3<sup>rd</sup>, 2011.

### **3-1 A tragedy foretold?**

According to *Inpe*, since July 2010, the mountain region had been hit by constant rainfall, above average. The existence of a well structured contingency plan, including alerting the population and escape routes to shelters, could have prevented the tragedy. A local official added that, even in cases where a contingency plan was constructed, as in Nova Friburgo, it should necessarily have predicted the mobilization and training of the population and community leaders at the time before the disaster, which did not occur.

The vulnerability of the region led, from 2004, managers and social groups of some of the municipalities to discuss strategies that would allow the real perception of the risks and planning actions to minimize and control them through the construction of the local Agenda 21. The Agendas 21 were the result of the International Conference on the Environment (Rio 92), as proposed, programs of action to encourage governments, together with society, to adopt sustainable development strategies, including social and environmental diagnostics, mapping of risk areas and developing of sustainable action plans.

In Nova Friburgo, the Local Agenda 21 was developed from 2006 to 2008 and a forum was held for leadership training and sensitization of residents, involving about 200 people. The socio-environmental diagnosis identified landslide risk areas and illegal occupation of hillsides, with no subdivisions or approved study, in areas

at risk of erosion and fires. In 2010, based on this work, it was prepared the Plan of Action for Sustainable Development of the municipality and approved resources of the National Fund for the Environment, not released until the end of 2010.

Teresópolis also built its Local Agenda 21, which denounced deforestation and occupation of risk areas. The City hall, in 2009, initiated preventive actions, removing 200 families from risk areas and presented in 2010, the Plan of Action for Sustainable Development, based on Agenda 21. In 2011, the city awaited the release of \$ 15 million from the National Environment for slope retention and relocation of families.

Petropolis started building its Agenda 21 in 2005, which, however, has not been completed due to the difficulty of mobilization. The risk mapping has been prepared in one of four districts of the city, and in 2010, resources of the Growth Acceleration Program No. 02 (PAC2) were approved to complete their studies.

Teresópolis and Petrópolis have also been objects of study in the Agenda 21 of Rio de Janeiro Petrochemical Complex (Comperj), being implemented by Petrobrás, in Itaboraí. The environmental impact report, prepared between 2007 and 2009, stressed the high priority in demolition of buildings in the areas of permanent preservation areas of risk in Teresópolis. It was verified that there was an intense occupation of land on the slopes steeper, which grew at random and disorganized manner, with areas in which 100% of homes were at risk. The report also said the problem was compounded by lack of control and accuracy of environmental agencies and the lack of infrastructure to enable monitoring.

The Secretary of Environment of the State of Rio, speaking after the disaster of January on the Local Agenda 21, prepared with support of the Secretariat, said the state has helped to point out problems, but that municipalities needed resources. Still, he said that the Agenda 21 led to improved monitoring.

Approached on the same subject, a senior Ministry of Environment (MMA) said the agency helped develop the methodology of Agenda 21, but it was up to the municipalities to take action and seek indicated funding sources.

The unpreparedness to deal with natural disasters was also recognized by the Brazilian authorities in 2010, in a report sent by the National Secretary for the Civil Defense to the Organization of the United Nations (UN). Brazil participated in 2005, in the World Conference on Disaster Reduction, when it adopted the Hyogo Plan of Action 2005-2015: Building the Resilience of Nations and Communities to Disasters.

The countries participating in the event pledged to develop a plan for reducing risks to cope with disasters.

According to the document submitted by the country to the UN in 2009, only 77.36% of the municipalities had official bodies created to deal with disasters. Limitations of financial resources and operational capacity undermined the risk assessment. The government acknowledged limitations in their ability to monitor and disseminate data on the vulnerability of the territory and also recognized that the lack of planning for the occupation and use of geographical space, disregarding risk areas, coupled with the lack of local monitoring, contributed to increase the vulnerability of communities.

In addition, the report indicated that few preventive actions had been implemented, which resulted in higher costs to meet the target population, compared to what would be spent for prevention. He acknowledged that Brazil had not yet begun the implementation of the National Alarm System, one of the commitments made by the country during the conference, action initiated only after the disaster.

### ***3-2 Explaining the unexplainable?***

Commenting on the causes of the disaster, a professor of Geology at the Federal University of Rio de Janeiro (UFRJ) said that the effect of the disaster was the trigger rainfall. In turn, the conditioning factors that explain the impact, landslides and mudslides occurred in that proportion, are related to the characteristics of the slopes, relief and surface water regime as well as the characteristics of the use and occupation of the land, with high incidence of sprawl along the riverbanks and slopes, both in urban and in rural areas.

The same conclusion was reached by the report prepared by the Geological Service of the State of Rio de Janeiro, RJ-DRM, published in January 2011, which identified as factors of the disaster the geology of the region, the irregular occupation of the soil and the high intensity of the rains.

According to a geotechnical engineer, who witnessed the tragedy in Nova Friburgo, there was a lack of communication, education and crisis management. Many people died for not receiving any information.

The director of the Center for Research on the Epidemiology of Disasters (CRED), in Brussels, Belgium, stated that factors such as infrastructure, urban settlement, development of public institutions and level of poverty and education help explain the disparity in the number of flood victims in Brazil and Australia, for example. According to the expert, institutions and more democratic mechanisms, that can reach all of society, including the poorest, which are at highest risk areas, can mitigate the consequences of natural disasters.



In a newspaper interview two days after the disaster, the governor pointed to the populism of old municipal administrations in the mountainous region, which gave certificates of ownership for residents in areas at risk as a major cause of the great proportion of the disaster.

On March 4<sup>th</sup>, 2011, the Environment Minister, at a meeting of the Council of Economic and Social Development, showed a study carried out by the MMA that states that failure in the enforcement of the current forest code was also directly linked to many of the more than 900 deaths in the mountain region of Rio. Several houses were destroyed in areas of permanent preservation, and many were within the range of 30 meters from the waterfront, an area that, according to the Forest Code, should have preserved their native vegetation.

The analysis contradicted the statement of the mayor of Nova Friburgo, who, under the impact of the tragedy, told the press that the tragedy had been a fatality resulting from the heavy rain, which had reached an intensity never seen before, and that nothing could be done to prevent it.

Replying to criticism about the lack of effective prevention, the State Secretariat of Public Works claimed that municipalities have difficulties to format projects and map risk areas: conditions for the release of funds for prevention works. In addition, the DRM had only 19 geologists to attend throughout the state, which prevented further support to municipalities.

Monitoring of deforestation and development on areas of risk, action that should be undertaken by the coordinators of the municipal civil defense, is also disabled, among other reasons, due the lack of resources and trained personnel. This situation prompted the city of Petropolis to move 15 city police officers to monitor construction in hazardous areas.

The withdrawal of occupations already installed can also find numerous obstacles in the legislation. According to the testimony of the vice-governor of the State to the press, the resident is only required to vacate their property in case of imminent danger. However, it is difficult to define imminent risk when dealing with natural phenomena, and in practice, no one can be removed from the so called risk areas without their consent. A removal action required by the Public Prosecutor, as appropriate, demands from 10 to 20 years to be completed.

### ***3-3 The structure of the Civil Defense***

The National System of Civil Defense (Sindec) began to be structured between 1988 and 1993, and aims to plan and promote actions to prevent disasters, minimize damage and help victims. Despite having gone through many changes, the last in 2010, is

still seen by the public and by members of the government as a fragile structure, with few financial and human resources, and with great difficulties to meet the challenges.

Now regulated by Law 12,340 of December 1<sup>st</sup>, 2010, the Sindec was conceived as a matrix structure that develops in three levels of government and throughout the national territory, articulating the public, private and civil society responsible for activities of civil defense. It has as its central organ - of articulation, coordination and technical supervision- the National Civil Defense Secretariat of the Ministry of National Integration (MI), and as a superior body, the National Council of Civil Defense (Condec).

The Department has an advisory and deliberative nature, presides over the Council and provides technical and administrative support to the Board of Deliberative Public Trust Fund for Disaster (Funcap). This was created in 1969 and supports the federal entities in an emergency situation or state of public calamity.

In the National Secretariat was created the National Center for Risk Management and Disaster (Cenad), which seeks to structure, through a computerized system, the management of preventive and responses actions and mobilization in disaster situations, human resources, materials and equipment. However, according to information published by the NGO Open Accounts in its website<sup>2</sup>, the Center has not yet begun to develop follow-up activities and monitoring of natural disasters in the country.

The Sindec unfolds in regional coordinations (Cordec) and in sectoral and support organs. In the states, it can be found the state Civil Defense coordination (CEDEC), institutions that do not follow a unique pattern. Some are located near the military office of the governor, others with the fire department or secretariats. They have, in general, little autonomy and resources, and its staff is composed largely of officials who do not have permanent bond.

One of the tasks of *Cedec* is to encourage municipalities to join the system, creating municipal Civil Defense coordination (*Comdec*) and along with them, community centers of Civil Defense (*Nudec*) also supporting activities of local structure, planning, training and execution.

The *Comdec*, in turn, are fundamental pieces, in the front line of the system, so that they articulate, coordinate and manage civil defense activities in the municipalities. However, similarly to what happens in *Cedec*, these coordination offices do not have the autonomy to develop their actions. Their budget is very small, there are few vehicles and equipment, and teams are too small, with

no permanent bond and high turnover, which undermines their capacity.

According to testimonies of some state authorities after the tragedy, among the seven counties affected by the disaster, only Petropolis, Teresópolis and Nova Friburgo, the hardest hit towns, had Comdec well structured and linked to municipal departments. One of the state secretaries said, however, that, in general, the Comdec in the state were weak and with little capacity for action.

According to the leader of the NGO (*Contas Abertas* - Accounts Opened) in 2010, the MI has spent 13 times more in emergencies than in emergency disaster prevention. To that end, an adviser to the Ministry acknowledged that the structure of the Civil Defense in Brazil is hooked on the "culture of emergency," and not the "culture of prevention", and claimed: "Along with the need for professionalization of the activity in the country, this cultural change is a big challenge." One of the great difficulties, he said, is to develop well structured projects, "Local governments cannot do the sanitation project, what to say about complex projects involving studies of geology and drainage. It is essential to mobilize the resources that exist in college, in the Army, in the private sector. "

The National Integration Minister himself has publicly acknowledged in a statement given to newspapers on January 18<sup>th</sup>, the structural weaknesses and financial system and the difficulties in the transfer of resources for prevention: "The Civil Defense has a lot to restructure. We want to eliminate the permanent criticism that the Civil Defense is slow, late and when the money arrives, the tragedy is over. This is true and proceeds. "

#### **4 - The immediate response to the disaster**

According to the general rules of civil defense, the response to a disaster is divided into two phases. In the first phase, the goal is the immediate control of the situation and reduction of the suffering through search and rescue actions, isolation of critical and risky areas, evacuation of the population and provision of shelter, food, clothing, medical care, control of means of transport and communication and the maintenance of public order.

The second phase is the rehabilitation or restoration of the affected area, which include emergency response in order to restore destroyed areas and infrastructure, and restoration of minimum requirements for survival - clean water, electricity, telephones, etc... - and safety. In each phase supervision is vital to define what to do, who should do and how. After the disaster response is finished, the reconstruction begins, which require sustainable actions, developed in the long term.



Source: O Globo

Several actors took part in the immediate response to the disaster, being highlighted the interventions made by federal, state and municipal governments and civil society.

Initially, the city halls were mobilized through their structures and civil defense and secretariats. Then, demanded by those city halls, the state government came to the area, activating the Civil Defense and the state agencies.

Verified the gravity of the tragedy, the federal government joined the rescue, with the MI (Ministry of National Integration) as the official interlocutor, responsible for coordinating the civil defense at the national level. This agency was joined by other ministries such as the Ministry of Defense (MD), the Ministry of Health (MS), the Ministry of Justice (MJ), the Ministry of Social Development (MDS), the Ministry of Agriculture, Livestock and supply (MAPA), and institutions such as the bank Caixa Econômica Federal (CEF), the Bank of Brazil (BB), the National Bank of Economic and Social Development (BNDES), among others.

Likewise, civil society also was mobilized. The residents of the affected area provided first aid. From the wide coverage of the tragedy by the media, were added to these efforts actions from social and private organizations that worked in the municipalities and state, as well as NGOs, churches and businesses, forming a large network of solidarity. According to information from state government, more than 500 actors were involved in disaster response.

However, despite its scale, the assistance did not reach the necessary effectiveness. The manner in which the various actors who acted in response were related and the role actually played by each of them, are factors that may help understand the governance of crisis management, in particular, the possibilities for coordination, collaboration and conflict.

#### 4.1 State Actors

During the first moments of tragedy, amid the general dismantling, the mayor of Areal, a town of 10,000 inhabitants, had a creative attitude. Upon knowing that the rain was flooding the cities, the mayor placed a warning of “maximum alert” using a sound car and, with the support of the local radio station, urged people to withdraw from the banks of the two rivers that cross the town and to head to safe places. Eighty houses were destroyed, 300 people were left homeless, but no one died in Areal.



Source: O Globo

In Nova Friburgo, on the 11<sup>th</sup>, when the rain started, the local Civil Defense coordinator phoned the mayor and the Residents Association informing about possible damage, and removed 300 people from a dangerous area. He also sent messages via the Radio Fribourg and Twitter - social networking site. However, this was not enough to warn the entire population. According to him, there was lack of perception of risk. Forty people died in the city center, an area that was not considered vulnerable.

On January 24<sup>th</sup>, homes located in risky areas began to be demolished in Nova Friburgo, after an inspection conducted by the Civil Defense. According to the city hall, the next step would be the construction of state-subsidized houses. On the same day, the mayor of Bom Jardim announced he would resign the office to assume the Office of Emergency

and Reconstruction that would be installed in Nova Friburgo and would report to the vice-governor of Rio de Janeiro. The role of the office was monitoring the cities affected by the disaster.

The restoring of affected areas was also slow. On January 25<sup>th</sup>, almost two weeks after the disaster, at a meeting with the mayor of Teresópolis and community leaders, residents complained that they still had no electricity, water and telephone in their homes.

The state government of Rio de Janeiro, in turn, initially focused its resources to rescue victims and clearing roads. On 12<sup>th</sup> January, the governor requested the Navy to make available two helicopters to transport to the highland serrana region men and equipment from the Fire Department.

On January 13<sup>th</sup>, the government relocated to Nova Friburgo the vice-governor of the state and the president of the Company of Public Works of the State (Emop) to assume the command of the actions, divided into two fronts. The first, led by the vice-governor, was responsible for caring of victims and the revitalization of the region's economy. The second, led by the president of Emop, was responsible for dealing with physical damage and promote the rehabilitation of the region. Other secretariats of the state were activated to support the population in the affected area.

The government also announced the creation of social rental for the homeless, developed in partnership with the bank CEF (Caixa Economica Federal) and MDS (Ministry of Social Development), within R\$ 400.00 to R\$ 500.00 over the period of 12 months until a permanent solution was found.

The Secretariat for Social Action and Human Development of the State (Seasdh) served primarily in conjunction with government, private and voluntary partners, involved in emergency actions, such as storage, collection and distribution of food, and shelter organization, as well as support and guidance actions to the public, such as issuing new documents and other bureaucratic arrangements. It was also developed integrated actions with the departments of Social Action of the cities, creating integrated offices of crisis and a central room for monitoring and controlling actions.

On January 17<sup>th</sup>, was published a decree of the governor declaring state of emergency in seven affected cities. On the 19<sup>th</sup>, this situation was recognized by the National Civil Defense, which facilitated the implementation of emergency measures by easing the procurement and execution of works and purchase of materials, and also enabled the release of federal funds, such as the Guarantee Fund for Length of Service (FGTS), anticipation of the *Bolsa Família* (The Bolsa Família

is a government program that benefits families in extreme poverty), among others.

The federal response came to the place on January 14<sup>th</sup>, when the President of the Republic accompanied by the Minister of National Integration and other ministers and state government officials, visited the region. On the same day, 225 men of the National Public Security Force, linked to MJ (Ministry of Justice) were sent to the region to assist in the search for victims and the maintenance of public order in the affected areas, mainly in Teresópolis. At the end of the day, the number of armed forces personnel moved to the region amounted to 556 men.



Source: O Globo

The MD released military personnel, aircrafts and vehicles. The activities included clearing roads and removal of debris in three cities, as well as support the distribution of donations by the Civil Defense and support the medical care in Campaign Hospital installed by the Brazilian Air Force (FAB) in Nova Freiburg.

Even on the 14<sup>th</sup> the Minister of Defense set the centralization of federal operations in a single command, through the Ministerial Directive No. 01/2011. The operations of the federal forces began to be coordinated by the general of division commander of the 1<sup>st</sup> Army Division (1<sup>st</sup> DE) of Rio de Janeiro, which had under his command an officer for each of the services involved in the operation. It was determined that the operational monitoring of the federal troops would be made by the joint chiefs of staff of the armed forces of Brazil, the MD.

On January 15<sup>th</sup>, FAB organized measures to support air and ground transport, also providing food, communications and fixed telephony or via radio for use in aid activities. Furthermore, it was established an Operations Search and Rescue sub-center (Scobs) in Petrópolis, located at the 32<sup>nd</sup> Motorized Infantry Battalion.

The MS released seven tons of medicines and supplies to serve 45,000 people over a period of one month. In addition, 50 volunteers from six federal hospitals of Rio de Janeiro were moved to the affected regions and 300 health professionals were made available for hospital care.

In turn, the MDS provided 8000 food baskets and the National Supply Company (Conab), from MAPA (Ministry of Agriculture, Livestock and supply), earmarked 44 tons of food for Teresópolis, Petrópolis, Nova Friburgo and Areal.

On January 19<sup>th</sup>, the federal government and the State of Rio de Janeiro instituted in Teresópolis the Emergency Committee for the Protection of Children and Adolescents, in order to ensure safety and provide care to the children and adolescents victims of disaster. The Committee was formed by the Judiciary Branch, public prosecutor's office, federal, state and local governments. It was also implemented, the SOS Missing Child, which centralized information about children missing or separated from their parents in various cities hit by tragedy.

Regarding financial support, the federal government, through MI, transferred R\$ 100 million to the Government of Rio de Janeiro and cities. To the victims of the rain it was authorized the withdrawal of up to R\$ 5,400.00 in FGTS. The MDS anticipated the Bolsa Família fund to 31,000 registered families in the region.

At the same time, the Brazilian government requested an advance loan of U\$ 485 million from the World Bank. These funds were used for removal of people from risky areas, construction of new houses to assist the homeless and to train personnel to deal with disasters.

The national banking system was also activated; the BNDES created an emergency program for the reconstruction of the areas of the state of Rio in order to provide funding to entrepreneurs and micro entrepreneurs. In turn, the Brazil Bank extended for 180 days, the payment terms for financing farmers in 11 districts affected by rain. Facilitated credit lines were created for the recovery of agricultural production, industry and trade in the highlands serrana region.

On 27<sup>th</sup>, January, the President announced the construction of 6000 houses for families affected by the rain, which will be subsidized by the program "*Minha casa, minha vida*" (My house, my life) and the state government. Businessmen from construction companies also donated workforce to build 2,000 houses for the victims of the disaster.



To coordinate the activities of federal agencies helping victims, the federal government created an office of mobilization to help victims, coordinated by the National Civil Defense Secretariat. The Secretariat also sent to the region 30 members of the Disasters Support Group (Gade), that is expert at rescue and recovery.

#### **4.2 Non-state actors**

Residents played a relevant role in immediate relief for victims, supporting each other. According to a local newspaper, facing the authorities' lack of strategy and logic, the volunteers became true protagonists of the rescue.

A city newspaper portrayed the fragility of the reaction to the disaster by municipal governments: "On the morning of the 12<sup>th</sup>, the survivors could not believe their eyes. The search for child, parent, sibling or relative was made by their own efforts. 'In the early hours, there was nothing", said a resident of Nova Friburgo – "neither firemen, nor Civil Defense. The help came from other residents". Long hours passed before there was a more direct action to help the victims. According to a resident of one of the affected rural areas of Nova Friburgo, help came only seven days after the event and people had to struggle alone for survival.

Once publicized the tragedy, a solidarity network was formed and a huge amount of donations and volunteers were sent to the affected areas. Road policing units, supermarkets, malls, schools, private companies, civil society associations and organizations, among other actors, received donations, which included drinking water, non-perishable food, clothing, blankets, mattresses, personal hygiene items and cleaning supplies. Bank accounts for collection of financial donations were also created by several entities.

Hundreds of volunteers headed to the affected areas to assist in the victims' searches, the organization and distribution of donations.

#### **5. Limitations of responsiveness**

The Civil Defense of the State of Rio de Janeiro, which is inserted in the Department of Health and Civil Defense, is coordinated by a commander of the Fire Department. As the Comdec, the state agency has little autonomy, limited resources and high staff turnover. In 2009, the state recorded that for its 92 districts, there were 87 active Comdec, under its coordination.

According to a local newspaper, when the aid actions began, there was no central command. Each municipality and each Civil Defense acted according to its own vision. There was lack of coordination and command.

In the midst of this despair and chaos, the most effective action was from the Fire Department, an institution which, under the Federal Constitution of 1988, besides the duties defined by law, is responsible for carrying out civil defense activities. However, according to legal analysts, the Fire Department does not necessarily occupy coordination position, and should link up with other agencies.

The newspapers reported a series of failures involving the disconnection between the Civil Defense and the Armed Forces. The Armed Forces was criticized for excessive bureaucracy and lack of agility in supporting the Civil Defense. According to a news report, the slowness led the press to get to places deemed inaccessible by the Civil Defense. It was admitted that the responsiveness of this institution was still fairly limited.

The mayor of Nova Friburgo, when talking about the relationship between the city and the state, said: "it was well divided what was the vice-governor and what was the municipality responsibility, to make the city work."

This positive view regarding the coordination of actions among the different federal levels, however, seemed to not be shared by the President. According to a newspaper, concerned about the disconnection between government agencies and upset about the delay in the immediate response, she stressed the intention to give greater prominence to the military in disasters. The institution should command the actions or support states and municipalities affected, since they would possess a greater capacity for organization and command.

The federal government announced its intention to invest R\$ 600 million in structuring the civil defense in the municipalities which are most vulnerable to environmental disasters. The project foresees the restructuring of the entire national system of Civil Defense, giving greater responsibility to the Armed Forces, and the construction of five regional military centers specialized in immediate aid to people affected by natural disasters.

The lack of communication between the various actors and bureaucratic procedures caused excessive delays in the effective implementation of actions. A team of 45 servicemen, for example, waited for a day for the decision of the mayor of Teresópolis to assemble a bridge.

In the case of FGTS withdrawal, many steps must be fulfilled: the MI must acknowledge the state of calamity; local governments must do the mapping of the affected areas and send it to the bank - CEF; and the worker must prove that they live in one of these areas. In a disaster situation, these requirements cannot always be met. Moreover, the

city halls of Petrópolis, São José do Vale do Rio Preto, Sumidouro and Bom Jardim did not receive the promised federal money immediately, due to problems in their accounts.

In granting social rents, an obstacle was the speculation. After the decision to grant social rents, the rents in the affected area had an increase of up to 100%, preventing access to most families. There were also difficulties in the registration and slowness from the bank CEF to release the financial aid. Some families only received rents months after the disaster.

There were also problems in the first delivery of the donations received from various regions of the country. It was reported conflicts between the city of Teresópolis and organizations, such as the Red Cross and the Catholic Church, which claimed that the government was obstructing the delivery of donations.

On January 28<sup>th</sup>, the executive director of the Red Cross stated that the excess of donations, combined with the declining number of volunteers, interfered in the logistics and led to a collapse of operations in the organization.

## 6. Final Remarks

There is no single answer able to explain the magnitude of the disaster in the highlands region. The objective of this case study is not exhaust all human and natural factors that contributed to the worsening of the consequences of high rain levels that hit the area in mid-January 2011. It seeks, in fact, to provide support, so the actions of various actors involved in managing the risks, as well as those directly responsible for immediate response to the disaster, can be analyzed from a structured perspective.

Was the immediate response to the disaster unsatisfactory? Were there failures of governance in managing the crisis? After all, who was in charge of the coordinating actions? How did the relations between the States influence the quality of response? How did the various actors communicate between themselves? How were their responsibilities defined in the process? Is it possible to say that a network was established to respond to the disaster? How did the prevention efforts impact the immediate response? Is there a trade-off between prevention and response? What lessons were learned? These and other questions illustrate the complexity of the context and the relationships developed in the disaster response in the highlands region. Implement mitigation and response actions to natural disasters is a major challenge for Brazil, even when it is claimed that the tragedy had been announced.

### Notes

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<sup>2</sup> <http://contasabertas.uol.com.br>