

# SOCIO-ENVIRONMENTAL VULNERABILITY AND DISASTER RISK REDUCTION: THE ROLE OF ESPÍRITO SANTO STATE (BRAZIL)

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## Introduction

The disaster of January 2011 in Rio de Janeiro State's Região Serrana (mountainous region) served as a warning to the country. Dubbed a mega-disaster (Brasil, 2012), the event is considered one of the biggest "climate" and mass movement (landslide) disasters ever to have occurred in the country. Seven municipalities were affected; most notably Petrópolis, Teresópolis and Nova Friburgo, and 947 people lost their lives. Disasters brought about by heavy rains leading to landslides and flooding are recurrent in Brazil's south-eastern region, primarily in the coastal Atlantic Forest belt.

In recent years, disasters of considerable environmental proportions and social impacts in Brazil have been numerous. In 2011 alone, 795 "natural" disasters were officially recorded in 2,370 municipalities<sup>i</sup>, leading to the deaths of 1,094 people and affecting 12,535,401 others. Sixty-five per cent (65%) of these were of hydrological origin (Brasil, 2012). This situation is aggravated during what are considered to be normal periods of tropical rainfall, which have significantly intensified in a short space of time.

In climatological terms, Brazil's south-eastern region falls under the influence of the Atlantic Convergence Zone (ACZ) and the ocean itself, which determine its rainfall systems primarily in the summer months between December and March. Located in this region, the State of Espírito Santo was afflicted in 2013 by two intensive rainfall events: In March, entire districts of the Greater Vitória Metropolitan Region (RMGV) - where the State capital is situated - were stranded, most notably in the city of Vila Velha when, for forty-eight hours, the city practically came to a standstill; in December of last year - just before Christmas - rainfall affected the whole state, particularly the RMGV and areas in the north of the state.

In this latter case, people were prevented from circulating safely on highways or even city streets across the state for a week. Of the 78 municipalities in the state, 54 were adversely affected, and a state of emergency declared in 45. 44,577 people had to leave their homes temporarily: 6,471 were housed in shelters, with a further 38,106 going to

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stay with friends and relatives. Twenty-four people died as a result of the event. Highways were partially destroyed or flooded, the state capital's airport was closed for several days and cities partly deluged. This situation mobilized thousands of capixabas (local name for the people of Espírito Santo State) over several days in campaigns for donation of food provisions and clothing for those affected<sup>ii</sup>, along with four tons of medicines sent by the federal government.

A common factor in recent disasters in Brazil has been the link between disordered growth of cities, giving rise to environmental degradation and social exclusion, and extreme events which, as referred to above, are very heavy tropical rains falling in a short period of time. Typical in regions of late development, the processes of economic growth and urbanization lead to occupation of Permanent Preservation Areas (PPAs)<sup>iii</sup>, without any kind of urban planning, evidencing the lack of state intervention.

Almost always, those worst-hit by extreme events are families with a background of social-environmental vulnerability living in such areas after having been marginalized by the real-estate market at a time of large-scale development projects in RMGV (Matos & Da-Silva-Rosa, 2011). Such vulnerable populations are repeatedly obliged to leave their homes, some temporarily and others definitively as a result of floods occurring in low-lying areas (as is the case with Vila Velha, ES), or landslides in hillside areas. In some cases, these people may lose their belongings or even family members.

What can be observed (not only in the case of RMGV, but in the country as a whole) is that various different actors are improving their response to emergency situations arising from intensive meteorological events - on the one hand, traditional government actors who seek to organize themselves to assist populations afflicted by disasters, primarily those known to be housed in at-risk areas, and on the other hand civil society, which has been preparing itself to achieve readiness for an emergency, mobilizing an entire network of volunteers to assist those made homeless through distribution of food and clothing.

More recently, such actors have been operating within the new paradigm introduced by Marco de Hyogo (2005-2015) in which prevention is the crucial focus in disaster risk reduction (DRR) (UNISDR, 2005). Such change of direction has brought about considerable changes in the approach to disasters. If - before this global benchmark came into being - disasters were faced only when they occurred, then in the new approach they are complexified because they are now understood as being implicated by different situations outside the disaster itself. This new paradigm brings the disaster under the social microscope without leaving aside the natural perspective, which demands a wider outlook in its approach. It is acknowledgement of the complex character of a disaster which forms the basis of necessary dialogue between the various actors with an end to finding a solution - it is also worth making mention of dialogue within the scientific community in respect of knowledge production, because disasters in the Anthropocene era should be studied by the different areas of learning.

Traditionally, Brazil has always responded to disasters from an emergency response point of view, explained by the country's Civil Defense background. The origin of the Civil Defense organization in the country goes back to the Second World War and is related to the concept of national security (Ministério de Integração Nacional, 2013).

In the 1960s, disasters occurring due to heavy rain in the region of Caraguatatuba (coastal São Paulo State) and in the city of Rio de Janeiro stimulated implementation of Regional Civil Defense Agencies (Ministério de Integração Nacional, 2013). In the same decade, the Ministry of the Interior was created with the aim of aiding victims of calamities, and in 1992 came to be known as the National Integration Ministry where the National Civil Defense Department (CEDEC) is housed today. Ironically, it was the mega-disaster in Rio de Janeiro State's Região Serrana (mountainous region) that is now considered to have been the paradigm shifting point in public policy on this theme. In 2012, the National Civil Protection and Defense Policy was signed, in which the idea of prevention – until that time completely peripheral to the whole risk-management process – was integrated.

Some Brazilian municipalities have been successful in their risk management work, promoting actions that aim to mitigate the socioenvironmental vulnerability and to minimize risk as much as possible. Belo Horizonte, capital of Minas Gerais state, received, in 2013, the Sasakawa Award for Disaster Reduction in 2013, from UNISDR; Campinas, a municipality from the state of São Paulo, has been highlighted, internationally, as a pioneer in the UNISDR's program "Resilient Cities".

With this scenario in mind, this text seeks to analyze the actions and role of the State in dealing with extreme events, looking to focus on the manner in which vulnerability, risk and disaster in urban environments are approached during government actions. The State of Espírito Santo is a case in point due to the impacts of recent extreme events in communities made vulnerable by urban spread, reflecting problems common to countries and/or regions with a late development process. This paper also aims to discuss contemporaneous responses post-Hyogo 2005-2015, with focus on the resilient cities concept, permeated by the relevance of preventive measures and the performance of local actors, whether governmental or otherwise, in the process of disaster risk reduction and mitigation of vulnerabilities, thereby demonstrating that the global discussion on the theme has been applied to local situations.

To this end, an analysis was conducted of public policy discourse on civil defense and protection at federal and state levels, with the Hyogo Framework for Action 2005-2015 serving as a reference. Based on the bibliography and debates occurring, particularly in international forums, the resilient cities concept will be discussed as a possible post-Hyogo action.

This paper is divided into two parts – one dealing with the discussion on vulnerabilities and disasters in the Anthropocene era and the other presenting data on the analysis of two official documents on protection and civil defense in Espírito Santo State.

## **Vulnerabilities and disasters in the Anthropocene era**

Based on the assumption that human activities are intensifying and leaving an ecological footprint on the planet of such significance to have caused a break in biogeochemical cycles, disasters would be characterized by being truly complex because

they would be breaking down the “limits”<sup>iv</sup> between the natural and the human which characterize the Anthropocene era (Bonneuil & Fressoz, 2013).

This view, according to which the human being would be identified as the origin of events such as climate change, elevates the notion of disaster to a new level. In order to understand and deal with this within such a perspective, dialogue involving knowledge obtained from different areas of expertise and that which is produced on an interdisciplinary level become essential. Moreover, when viewed in this way, disasters are faced as the responsibility of humanity itself, revealing a given method of use (or abuse) of natural resources. As with other socio-environmental issues they have, in the natural-social system, their causes and effects.

As such, the notion of disaster is considered with a wider and more complex outlook, including it as a factor for criticism of current development standards and an intervening factor, in a medium to long-term scenario, of a model for ecological sustainability of development. It is therefore in the complex perspective, i.e. existing interconnectivities between the various dimensions which integrate the disaster situation, with the Anthropocene era as the backdrop, that disaster is dealt with in this paper.

The fact that disaster may be defined by different social actors renders the quest for its definition a more difficult task within the social perspective (Perry, 2005), as it brings out perceptions, meanings and interests beyond the historical context in which such actors are inserted. According to Perry (*id.*), the sociological perspective of disaster was initially brought to the fore by Fritz (*apud id.*) in the 1960s when he referred to the impact an event may have on a community. In Brazil, Valencio (2011) presents the idea of disaster as a tragic social event; in addition to material losses there are also, on the symbolic plane, emotional impacts and damage suffered by each individual. It is, however, the impacts on the social system - causing breakdown of social relationships and structures, which render the disaster an object of sociology - historically and spatially determined (Perry, 2005; Valencio, 2011).

Lindell (2011) breaks down the disaster into three phases: the pre-disaster, taking into consideration conditions prior to the event such as social vulnerability in a community; the trans-disaster, linked to the event itself; and the post-disaster, being the conditions for recovery. The author, in this way, draws attention to two important points in dealing with disasters: prevention with mitigation of vulnerabilities and enhancing a community's capacity for resilience, preparing it to face the event; and community recovery, including strengthening of resilience when a further event is imminent.

The discussion about vulnerability is present in many definitions of disaster. This relation started during the 1960s, a period called *hazard-disaster tradition*, which studies relate the environment, the natural event, the socioeconomic system, the people and the social relations with the disaster (Perry, 2007). The discussion about vulnerability was also highlighted during the 70s and 80s, mainly about the structural and contextual perspective of a disaster, focusing on the human and social relations (Gilbert, 1998). Therefore, vulnerability can be seen as multidimensional, including social, economical, environmental, psychological, and many other aspects, present in a community prior to a disaster.

Disaster is not, therefore, only about the moment at which it happens, but also the before-and-after when actions to stimulate and/or increase resilience are crucial to ensure that the community has the ability to react so as not to suffer such heavy impacts. It is understood that such actions are structured on the principle of sustainability. In the same way that DRR identifies it as its purpose, sustainability can be integrated as much into mitigation of vulnerabilities applied by the late-development model as into recovery and reconstruction.

The Brazilian Civil Protection and Defense organization take such view of disaster when the model of disaster treatment is broken down into prevention, preparation, response and reconstruction (Ministério da Integração Nacional, undated.). In addition, the second notion has been disseminated in the country that each actor in the process should act in each of these phases, seeking teamwork and dialogue with peers and insertion into Contingency Plans, for example.

Based on the above, it is evident that the understanding of disaster assumed in this paper is subject to a social perspective, where responsibility falls upon political stances historically taken, assumed, or otherwise. Rooted as it is in the social system, a disaster is a social phenomenon (and not just physical as assumed for so long), because it is socially constructed (Quarantelli, 2005) on a physical base (considered here as environmental) involving aspects of geology, geomorphology and ecology of the area in which vulnerable communities are situated. An event, whether an earthquake or landslide occurring in an area uninhabited by humans, neither holds any interest for, nor will be the object of a sociological examination simply because it does not expose a breakdown of social relationships and/or institutions existing in human groups. Having said this, the environmental perspective cannot be overlooked, particularly in urban environments occupied in a disordered fashion in late-developing regions such as in the case of Espírito Santo State.

No disaster, therefore, is outside the community (Ribeiro, 1995) insofar as it reflects the presence or absence of historical decisions. On the other hand, such decisions enable a disaster to be mitigated if social actors adopt new political stances, which should occur based on a governance process in which all stakeholders have a voice. The disaster is therefore considered to be a phenomenon socially and historically constructed on an environmental base, to be known from that point on as a socio-environmental disaster.

It is during such decision-making (or its absence) that discussion is had on prevention and reconstruction of a dynamic capable of contributing to ecological and social sustainability of development, in which the idea of resilient cities<sup>v</sup> can take its place. This idea identifies sustainability as a development strategy capable of contributing to DRR based on ten essential steps<sup>vi</sup> for making cities resilient<sup>vii</sup>. This is a decision to be discussed and assumed by the community as a whole based on a governance process involving all actors and, primarily, the community. In this perspective, it is assumed that a disaster may present an opportunity for construction of a new project in society acting both in prevention and reconstruction. To this end, the disaster is seen as having the potential to produce policies (Guggenheim, 2014).

## The role of the State in the case of Espírito Santo

It is in this context that the role of the State emerges as one of the social actors to contribute to prevention and DRR. It is understood that, chiefly in a governance environment such as we see in modern times, all actors have an equally essential role to perform: local, regional and federal governments; community associations; NGOs and INGOs<sup>viii</sup>; the private sector; educational and research institutions, etc. Taking into consideration the current Anthropocene scenario, the principle of responsibility complexifies the role of the State in the process of providing social conditions which contribute towards the occurrence of a disaster. Social vulnerability reflects the lack of basic infrastructure and urban planning, non-observance of legislation on land occupation and use and lack of access to quality education and healthcare, among other aspects.

All such conditions are produced by the development model in which social inequality and exclusion of populations go hand-in-hand (Da-Silva-Rosa & Mattos, 2012), placing emphasis on the economic dimension and leaving other dimensions of the real situation aside. In this sense, the government political sphere has its portion of responsibility as, in the case of Brazil and Espírito Santo, the State was absent, for example, at the time of occupation of environmentally fragile areas such as hillsides, riverbanks or mangroves.

The disaster is not therefore a “neutral” event (Guggenheim, 2014), but reflects the absence of the State (or its consent) at a given moment when it did not act (and does not act, in some cases) to modify occupation of urban areas through public housing policies and urban and spatial planning. In this context, the aim of disaster sociology is to contribute to revealing political factors and social actors involved in the occurrence of disasters. In other words, seeking answers as to how the political sphere, through public policies or actions or omissions, contributes to creation of socio-environmental vulnerabilities, bearing in mind that it is these that give rise to disasters.

A situation of environmental injustice is produced within this context when vulnerabilities place at risk communities which, historically, live in circumstances of deprivation as is the case for populations excluded from the development process. Such approach to disasters, with the bias of socio-environmental vulnerabilities, highlights a further aspect for consideration: the fact that the disaster has an ethical dimension related to human rights (Sachs, 2008), as populations historically rendered vulnerable are those that – also according to the literature – are most probably under threat of suffering from the impacts of extreme events in addition to having a lower capacity for resilience and reconstruction. They end up as the *hostages* of a political body which, instead of prioritizing actions to make up for absence of or restricted access to basic services, refrained (and still refrains) from assuming its responsibility and respect for the principle of equality. Such principles, if included on the agenda, would strengthen and protect different communities with equality in such a manner that all could be ready to act from prevention to reconstruction in a context of socio-environmental disaster.

Such scenario of socio-environmental vulnerability construction is evident in the case of Espírito Santo (Map 1). In the 1970s, large-scale development projects attracted

immigrants, primarily those expelled from declining coffee plantations in the state. At that particular moment, the Greater Vitória Metropolitan Region (RMGV) began to undergo increasingly accelerated urban expansion. Thereafter such process, coupled with the lack of urban planning and basic public services, exposed serious situations of poverty and socio-spatial segregation (Siqueira, 2010a & 2010b).

The urban development process has, more recently, been stimulated by new development projects, primarily in the oil and gas sector and port construction, once again based on qualified labor drawn from outside the state and country due to the local workforce not being sufficiently qualified to operate in a technologically advanced environment.

Map 1: Brazil



PORTUGUESE	ENGLISH
GRANDES REGIÕES	LARGE REGIONS
NORTE	NORTH
NORDESTE	NORTHEAST
SUDESTE	SOUTHEAST
SUL	SOUTH
CENTRO-OESTE	MID-WEST
Fonte: IBGE	Source: Brazilian Geographical and Statistics Institute (IBGE)

MAP 1: Brazil. IBGE. **Mapas político administrativo**. Available at <<http://mapas.ibge.gov.br/politico-administrativo>>. Accessed on 24 September, 2014.

Such process is currently intensified by new projects, under the auspices of exploitation of new natural resources, superimposing fresh problems on older ones and consequently aggravating socio-environmental vulnerability situations. If previously the lack of basic sanitation, health centers and good-quality schools could be “bypassed” with the solidarity of some actors (mainly churches), today such problems are chronic and more difficult to deal with in a city which is now consolidated, demanding another type of action from the State from a disaster-risk reduction point of view: prevention, preparation and reconstruction as a method of achieving sustainable development, with construction of resilient cities as the goal.

In 2013-2014, there were registered 74 occurrences, which resulted in either emergency situations or public calamity state. In those emergency situations, there were runoffs, droughts, mass movements, erosion, flooding and intense rains, being that runoffs were the most frequent event. The droughts were the only kind of event that resulted in a public calamity state, the were six registrations of them between 2013 and 2014 (DEFESA CIVIL DO ESPÍRITO SANTO, 2014). What has been observed in the case of recent disasters in Espírito Santo, as these listed, is the difficulty in taking public action in terms of prevention, preparation and sustainable reconstruction despite public policies – at both federal and state levels – paying more attention to such DRR management phases. This reminds us of what Guggenheim (2014, p. 11) talks about when he states that research on political spheres producing disasters highlights the inability of the State to take adequate risk reduction actions. In spite of the efforts being made across different agencies in Brazil, and in particular Espírito Santo, there is still much to do in respect of preparation, prevention and reconstruction concerning disasters.

There have been decades of a welfare-assistance mindset geared only for the emergency situation, when the risk-mitigation solution was merely technological and engineering-based, without taking into consideration the experience and capacity of the population falling victim to the disaster. The concept of disaster itself is rooted in Engineering, initially applied to physical and structural aspects; it then migrated to the social sciences, creating the requirement for expansion of the discussion beyond technical disciplines. It should be borne in mind that the Brazilian Civil Defense organization has



its base in the state fire brigades, whose organizational structure is military, and that the very idea of the term is related to notions of militarization of national security – protection against an outside element (Gilbert, 1998); in other words far-removed from what, these days, could be called emergency management.

Nevertheless, Brazil has made advances in DRR, including the attempt to meet the commitment assumed on an international level with the Hyogo Framework for Action 2005-2015, established as part of the United Nations International Strategy for Disaster Reduction (UNISDR, 2005<sup>ix</sup>). Brazil is an active participant in international and regional discussions, in addition to promoting dialogue at national, state and municipal levels, integrating the various actors involved.

### **Protection and Civil Defense in Espírito Santo: understanding of Fragmented Risk**

Two state-level references for DRR are discussed below: (1) the State Civil Defense and Protection Plan (PEPDEC), considered to be the contingency plan for ES, and: (2) Complementary State Law 694/2013 (CSL 694), which reorganizes the state Civil Defense and Protection System.

PEPDEC determines that the effects of a disaster be minimized and that “social normality” (*sic*) be re-established through actions for prevention, preparation and response. From a generalized point of view it meets the determination of the HFA; it is, however, possible to perceive some dissonance with the spirit of that framework.

PEPDEC actions focus more on response<sup>x</sup>, revealing that it is much more of a contingency plan than a DRR management plan. The document addresses prevention and preparation, mainly in its description of the specific responsibilities of each agency and in presentation of risk mapping. It is also important to note that the guidelines presented in PEPDEC do not consider the issues of poverty reduction and community participation to satisfy local needs, as called for by HFA. On the other hand, risk is not understood in a complex way by administrators according to Araújo *et al* (2014). Some affirm that risk is only related to health issues, denying its complexity and reinforcing the idea of risk as a consequence of disaster and not as a pre-existing condition built over decades, as found in the HFA risk perspective. Thus, risk is not perceived as a situation prior to disaster itself, related to the historically-constructed social and environmental vulnerabilities of communities. This fragmented perception is present in both documents.

It appears evident that the PEPDEC does not contemplate community contribution in elaboration or implementation of DRR actions. Local communities are merely treated as the population to be served by the actions, i.e. the community is not perceived as being one of the responsible actors and administrators in the process, as the HFA calls for. It should be recognized that at this level, two actors are not mentioned: the universities and the Instituto Jones dos Santos Neves, a state research agency.

In the two state laws above, risk is developed in a very narrow perspective in terms of its historical process, incorporating social vulnerability, ecological, geological and geomorphological aspects. For instance, no discussion is had about the development

framework – an unequal and unsustainable development model focused on economic dimensions. Thus, causes are not really considered or treated in a complex manner focusing on natural and human elements. This means that the concept of risk in these documents is still very fragmented.

In PEPDEC 2012, risk appears much more as a factor to be mapped. What is observed in practice is disorganized mapping of risks – and vulnerabilities – among and between public agencies and other actors such as research institutions and universities. This will result in an overlap of actions (in this case mapping) with neither official mapping taking place, nor a single, coordinated source of data and information, even if drawn from different institutions and actors. Such overlap of actions confuses more than it contributes to implementation of DRR.

PEPDEC 2012 lists the duties of State departments in prevention, preparation and response, in particular, incumbent on the State Civil Defense Coordination/CEDEC, among whose duties include support of the State Policy on Climate Change. When one analyzes actions to be put into practice by the different State departments, what is noticeable, primarily in respect of the sustainability principle, is a complete lack of terms which could refer to this category. For example, prevention actions, which could be aligned to the principle, prioritize response in a situation of emergency. As an example, one of the two actions of the Department for Sanitation, Housing and urban development provided for in PEPDEC (2012), seeks:

“to act in a preventive manner, with the support of municipal risk reduction plans, macro-drainage plans and execution of works for prevention and recuperation of damage caused by heavy rains, or recovery of water resources for prevention of drought” (p. 43).

Such vision reveals the still strong tendency towards a view of risk from a perspective of disaster and response rather than prevention, leaving aside the opportunity to implement sustainable actions. This is reinforced by CSL 694, demonstrating that the PEPDEC approach to risk is reproduced therein.

Another aspect to highlight is the difficulty in dealing with the notion of a consolidated city - as mentioned previously - raising the question of land-use and social inequality. In general, Brazilian laws on DRR are seen as being too strict because they do not consider this point. The same occurs with state-level policies on DRR. The consolidated city idea also reveals that laws are often established after irregular urban land occupation has occurred - in Brazil this means occupation of steep slopes, mangroves and riverbanks - areas that federal environmental law determines should be reserved for permanent preservation and in which it is illegal to build.

Bearing these points in mind, at least two questions arise from this analysis. Considering that HFA draws attention to the need to integrate risk into Poverty Reduction Strategies - related to development projects - how can DRR be integrated into development policies or planning when risk is not understood in its complexity? The second question is how to engage community participation in the sense of being aware of its needs if the population is not mentioned in such a document? Moreover, it must be borne in mind that the community to which the document would refer lacks basic education – hampering access to information required for DRR.

Despite the effort invested in establishing them, the two DRR reference documents for Espírito Santo State can be considered as inadequate due to their fragmented view of risk. This aspect may compromise integration of the notion of risk – while a complex category – in other policies, consequently missing the opportunity to fulfill the commitments assumed by the country in the international scenario. Such is the case of the Millennium Objectives, whose expiry date coincides with that of HFA in 2015; a year for review of what has been achieved in terms of the two international milestones, and for planning of what will be done going forward from then.

What is observed is an environment more prone to a lack of articulation between sector Public Policies, thereby compromising coordinated action prioritizing RRD, construction of sustainability and of resilient cities as mentioned above. Characterized in such a way, this present social environment appears more likely to exacerbate the situation of environmental injustice in which at-risk populations find themselves, doing nothing to contribute to the ethical dimension of respect for human rights. In other words, the current social-economical context does not promote, in any way, actions that develop and endorse human rights, especially towards those communities in a vulnerable situation.

In this sense, a need is apparent at state and municipal levels for improvements in discussion and awareness about risk, primarily among managers because they are very new to this area. This points to a lack of information on risk for those responsible for implementing actions or providing help to vulnerable communities. It also indicates a need for greater discussion about risk management involving public administrators and communities alike.

Finally, it is important to point out that communicability between the national, state and municipal levels of government is legislated for in Complementary State Law 694/2013, in terms of: (1) coordination and promotion regarding implementation of joint actions between state and municipal levels; (2) provision of information and support to the National Department for Protection and Civil Defense and concerning the occurrence of disasters and other civil defense activities. According to this law, the State government should promote development of public policies that help to create instruments for the joint execution of actions by the state and municipal Civil Defense and Protection Agencies which are able to enter into technical cooperation and financial agreements for the purpose of training.

## Final Considerations

The DRR is one more strategy for implementation of an ecologically sustainable society project at a moment in which extreme climate-related events have occurred with greater frequency, exposing risk situations in which populations rendered vulnerable by a historical process live. To this end, DRR can be understood as an opportunity to enact sustainability principles, thus responding to the Millennium Objectives and climate change/sustainable development agendas.

The international benchmark regulating and guiding application of DRR actions is the Hyogo Framework for Action, in whose formulation Brazil played a part and has

been noteworthy in its implementation nationwide. Municipalities such as Belo Horizonte (Minas Gerais) and Campinas (São Paulo) have been a reference. However some states, such as Espírito Santo, still need to update and/or amend their legislation and public policies to fall in line with the international discussion, integrating – in documented form – community and academic participation into actions of prevention, preparation, response and reconstruction. Although in their beginning, such practices are being applied, as observed during the 1<sup>st</sup> Inter-municipal Conference on Civil Defense and Protection (March 2014), and the 2<sup>nd</sup> State Conference on Civil Defense and Protection (April 2014), at which various actors discussed objectives and principles of the system and the different phases of action. These conferences happened as local and regional preparatory stages leading to the 2<sup>nd</sup> National Conference on Civil Defense and Protection (November 2014), which will discuss the new paradigms to the National System.

There is still apparent resistance to widening the theme to actors not in the public sphere, but there is a need for other state departments and agencies not directly involved in Civil Protection and Defense to be engaged in the discussion and practice of prevention, preparation and reconstruction, and not just with predefined actions to be executed in response. In this way the risk-management culture would be propagated in an integrated, horizontal manner whereby mitigation of vulnerabilities and risk reduction become the responsibility of all, with strengthening of communities and construction of resilient cities. Only in this way will Protection and Civil Defense actions, based on a risk-management strategy, become inter-departmental and interdisciplinary, developed by all corresponding departments and agencies with the involvement of other actors. Such action is increasingly necessary to ensure that DRR management does not lose its key focus - change to current standards, practices and development processes (UNISDR, 2013<sup>vi</sup>). To this end it is necessary to integrate DRR management into departmental public policies as a cross-fertilized theme.

Finally an essential point is noted: the requirement that development of discussions and actions, although perceived to be in the early stages in Espírito Santo State, not be altered in line with changes in public administration. Such practice has been a reality not just in this state but across Brazil: lack of continuity of actions. What is hoped is that the risk-management culture, mitigating vulnerabilities and building resilient communities do not become the agenda of one specific government or manager, but rather that it be something long-term, regardless of political administration changes – this is achievable through training and education of inter-departmental teams working, whether directly or indirectly, in socio-environmental disaster situations.

## Notes

i 1,247 located in the Southern Region and 569 in the country's Southeast (Brasil, 2012).

ii G1. Veja a situação das rodovias estaduais e federais no ES. Available at <<http://g1.globo.com/espírito-santo/noticia/2013/12/veja-situacao-das-rodovias-estaduais-e-federais-no-es.html>>. Accessed on 18 november, 2013.

iii Constituted in 1965 to preserve biodiversity and according to the Forestry Code, Permanent Protection Areas are areas of: forests and other natural vegetation situated on the banks of lakes or rivers; hilltops; sandbanks and mangroves; hillsides; tableland or plateau edges with slopes.

- iv Constructed primarily during the Modern era, when men proclaimed their ability of dominating nature. Modern science has contributed, essentially through technology, to construction of spaces whose ecological, geomorphological or social characteristics were not respected.
- v UNISDR. Resilient Cities. Available at <<http://www.unisdr.org/campaign/resilientcities/>>. Accessed on 18 November, 2013.
- vi UNISDR. Essentials. Available at <<http://www.unisdr.org/campaign/resilientcities/toolkit/essentials>>. Accessed on 18 November, 2013/
- vii Resilience is “The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner...” (UNISDR, 2009)
- viii International Non-Government Organizations.
- ix United Nations International Strategy for Disaster Reduction (UNISDR). 2005. Hyogo Framework for Action 2005-2015: building resilience of nations and communities to disasters.
- x See item 3.3 “Planning Assumptions”.
- xi This is the basic document upon which the future framework will be built through the formal preparatory process of the 3rd World Conference for Disaster Risk Reduction (Sendai, Japan, 2015).

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Submitted on: 21/05/2014.

Accepted on: 06/10/2014

<http://dx.doi.org/10.1590/1809-4422ASOC1068V1742014>

# SOCIO-ENVIRONMENTAL VULNERABILITY AND DISASTER RISK REDUCTION: THE ROLE OF ESPÍRITO SANTO STATE (BRAZIL)

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**Abstract:** Rainfall is a natural event having significant impact in the state of Espírito Santo (Brazil), resulting in floods and mass movements, damaging communities in a historical situation of socio-environmental vulnerability. The State Civil Defense is mobilized towards risk mitigation through the State Civil Defense Department (CEDEC) and through the development of the State Protection and Civil Defense Plan, coordinating multiple social actors. This paper aims to analyze the acts and role of the State in response to extreme events, focusing on how vulnerability, risk and disaster in the urban environment are tackled by government policy. Furthermore, it aims to discuss the contemporaneous actions after Hyogo 2005-2015, focusing on the concept of resilient cities, given the relevance of prevention work and actions by local actors, governmental or not, in the process of risk and disaster reduction and of mitigating vulnerabilities, demonstrating the application of the global discussion in local situations.

**Keywords:** vulnerability, risk, State, public policy

**Resumo:** As chuvas são um evento natural de grande impacto no estado do Espírito Santo (Brasil) resultando em inundações e deslizamentos e afetando famílias em situação de histórica vulnerabilidade socioambiental. A Defesa Civil estadual se mobiliza na mitigação dos riscos e danos através da Coordenadoria Estadual de Defesa Civil (CEDEC), como no desenvolvimento do Plano Estadual de Proteção e Defesa Civil, articulando vários atores sociais. Esta comunicação visa analisar a atuação e o papel do Estado no enfrentamento dos eventos extremos, focando no modo pelo qual vulnerabilidade, risco e desastre em ambiente urbano são abordados nas ações políticas governamentais. Ainda, objetiva discutir a atuação contemporânea pós Hyogo 2005-2015, focando no conceito de cidades resilientes, dada a relevância do trabalho preventivo e da atuação de atores locais, governamentais ou não, no processo de redução de riscos e desastres e de mitigação de vulnerabilidades, demonstrando a aplicação da discussão global em realidades locais.

**Palavras-chave:** vulnerabilidade, risco, Estado, política pública

**Resumen:** Las lluvias son un evento natural de grande impacto en el estado de Espírito Santo (Brasil) resultando en inundaciones y deslizamientos, y afectando familias en situación de vulnerabilidad socioambiental histórica. La Defensa Civil estadual se moviliza en la mitigación de los riesgos y daños a través de la Coordenadoria Estadual de la Defensa Civil (CEDEC), desarrollando el Plano Estadual de Protección y Defensa Civil, y articulando los variables actores sociales. Esta comunicación visa analizar la actuación y el papel del Estado en el enfrentamiento de los eventos extremos, enfocando como la vulnerabilidad, el riesgo y el desastre en ambiente urbano, son abordados en las acciones políticas gubernamentales. Además, objetiva discutir la acción contemporánea pos Hyogo 2005-2015, enfocando el concepto de las ciudades resilientes, dada la relevancia del trabajo preventivo de los actores locales, gubernamentales o no, reduciendo riesgos y desastres, mitigando vulnerabilidades, y demostrando la aplicación de la discusión global en realidades locales.

**Palabras claves:** vulnerabilidad, riesgo, Estado, política pública

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