

**THE 'GREAT FIRE' OF VALPARAISO 2014: SOCIAL CLASS  
DIFFERENCES AND PEOPLE'S VULNERABILITY. A CASE STUDY OF  
WILDLAND-URBAN FIRE**

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## INTRODUCTION

This working paper argues that social class differences are related to the spatial redistribution of vulnerability, which is defined as a comprehensive approach to understanding how human settings are the causes of disasters rather than simple exposure to natural hazards. Spatial inequality issues within Chilean society were examined through the case of a recent fire in the city of Valparaíso in April 2014.

The main aim of this paper is to explore the factors that affect the vulnerability of the residents of the hills of Valparaíso. Hopefully, the lessons drawn from this analysis can help shed light on a complex urban system where the main trend has been one of increasing levels of poverty and segregation in one of the three largest cities in Chile.

The relationship between social class and disaster has been extensively explored as a result of Hurricane Katrina in 2005. From a materialist point of view (Ibragimov 2011), vulnerability and class are related because of financial and assets access that different groups have to cope and recover. However, race and class as cultural perception explains the biggest differences in the effects of the hurricane (Elliot and Pais 2006). During the period of recovery, class was an effective approach to explain the differences in power relations and advocacy (Weber 2012).

However, according to Benson and Twigg (2007: 114) *Vulnerability* is 'the potential to suffer harm or loss, related to the capacity to anticipate a hazard, cope with it, resist it and recover from its impact. Both vulnerability and its antithesis, *resilience*, are determined by physical, environmental, social, economic, political, cultural and institutional factors'. As a factor of vulnerability, social class has specific impacts on marginalised groups (Twigg 2004) related to socio-economic indicators as is commonly assessed. Furthermore, the Valparaíso case study includes a series of social practices such as historical background, livelihood and type of settlement that are beyond economic indicators and differentiates vulnerability of one group (or class) from another.

## RESEARCH APPROACH

### *Research questions*

- To what extent does the Valparaíso fire exhibit patterns of social inequality that obstructed disaster preparedness?
- How are marginalised groups addressing the impact of disasters during the emergency and recovery periods?

### *Methods and data*

Methods used in this study are a mixture of ethnographical research, Vulnerability and Capacities Assessments (VCA) (Benson and Twigg 2007) and Grounded Theory (Seale et al. 2004).

The ethnographic approach is appropriate for answering the research questions because it involves a description of groups and their beliefs requiring a 'partial immersion' from the investigator (Seale et al 2004: 218). Moreover, the researcher is from the affected area as well, therefore, to acknowledge the rapport was an important issue to separate the study from the natural concern about the emergency which also involved to intentionally sidestep personal narratives from the analysis.

The research was carried out following VCA's approach to social appraisal, focusing on a particular geographical area or sectors such as the hills affected by the blaze to initially 'identify internal (susceptibility to loss) and external (response to hazards) dimensions of vulnerability' (Benson and Twigg 2007: 110). Findings were categorised using the Pressure and Release model (PAR) (Wisner et al., 2004) to understand the intersection between the fire as a hazard and the processes generating vulnerability. This model implies hazards are not simply natural events but what makes them susceptible to become a disaster are the social systems and their capacity to absorb the results of the event. These processes were organised 'from the most immediate to the underlying factors' (Benson and Twigg 2007: 104) considering: Hazard type;

unsafe conditions; dynamic pressures and root causes. Although this paper took a 'snapshot' of the conditions in Valparaíso at the time of the emergency, these serve to identify trends related to social class that affect vulnerability.

Given that it is a type of research based on empirical evidence (Walker 2006), grounded theory will facilitate the generation of generalisations from the data rather than proving a pre-conceived idea or testing a hypothesis formulated prior to the data collection (Seale et al. 2004).

Data collection is mostly based on secondary sources such as press reports and information gathered from social media such as Facebook, which provided a continuous flow of material consisting of a mixture of pictures and comments, requests for aid in certain affected areas, fundraising campaigns or press articles and videos from the news and volunteers helping on site. The limitations of this type of data collection stem from the timeframe of the disaster which was only three weeks before writing this report. Therefore, the information focused on the period of response (Alexander 2002: 6) which covers the emergency and the initial restoration. Community-level and participatory VCA strategies could not be performed. However most of the information was generated in the field using excerpts from press interviews.

## **BACKGROUND**

### ***The event***

The 2014 blaze in Valparaíso has been compared by the media as equivalent to the 1906 earthquake that destroyed most of the city. According to the Chilean government<sup>1</sup>, as a consequence of the fire there were approximately 12,500 victims evacuated from their homes, 952 persons in shelters, 2,500 dwellings lost, and 15 fatalities. The fire covered 965ha between 16:00 and 19:00 hrs. on Saturday 12<sup>th</sup> of April. Although most of the fires were declared contained on Sunday, there were several outbreaks until Monday 14<sup>th</sup>. On the night of the 12<sup>th</sup> of April, the President declared the city of Valparaíso in a 'state of exception and a disaster area' ("Zona de Catastrofe"): in Chile, this declaration gives special remits to government agencies. In this case it involved the deployment of the army by presidential order to provide security during the emergency, and additional public funds to help the victims of the fire were guaranteed by the presidency.

### ***Media storyline***

During the first day the story was treated similarly by national and international media, which were focused on the scale and destructive effects of the event, using mostly pictures and homemade videos without much other information available (Figure 1, pictures 1-2). On the second day, the fire did not have as much coverage in the international media as in the national media. In Chile the news from Valparaíso received more attention than the 8.2 earthquake in the north of the country that happened two weeks before the event. During the following days fundraising campaigns were quickly started up. In social media (Figure 1, pictures 3-4), initiatives to support the affected people were labelled using the slogan "Fuerza Valpo" (Go ahead Valparaíso!). The aid, such as food or clothes, was received from the general public across the country. Volunteers played an important role in the response during the period of restoration. In picture 5, taken on the 17<sup>th</sup> of April (Figure 1), they are helping to reconstruct the dwelling of an affected family in a ravine. National NGOs started campaigns to attract volunteers and organised networks of assistance (Figure 1, picture 6).

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<sup>1</sup> As of April 17<sup>th</sup> 2014

Figure 1. Pictures relating to the fire. To the left, international media coverage of the blaze April 12<sup>nd</sup> -14<sup>th</sup>. To the right social media in Chile on aid and reconstruction April 17<sup>th</sup> – 21<sup>st</sup>



1



4



2



5



3

**TECHO** UN TECHO PARA CHILE **#1000TECHOS PARA VALPO**

**DONA UNA VIVIENDA BÁSICA\* PARA LOS AFECTADOS POR EL INCENDIO DE VALPARAÍSO.**

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\*La vivienda viene equipada con 2 camarotes, 2 camas matrimoniales, cocina y un set de comedor.

6

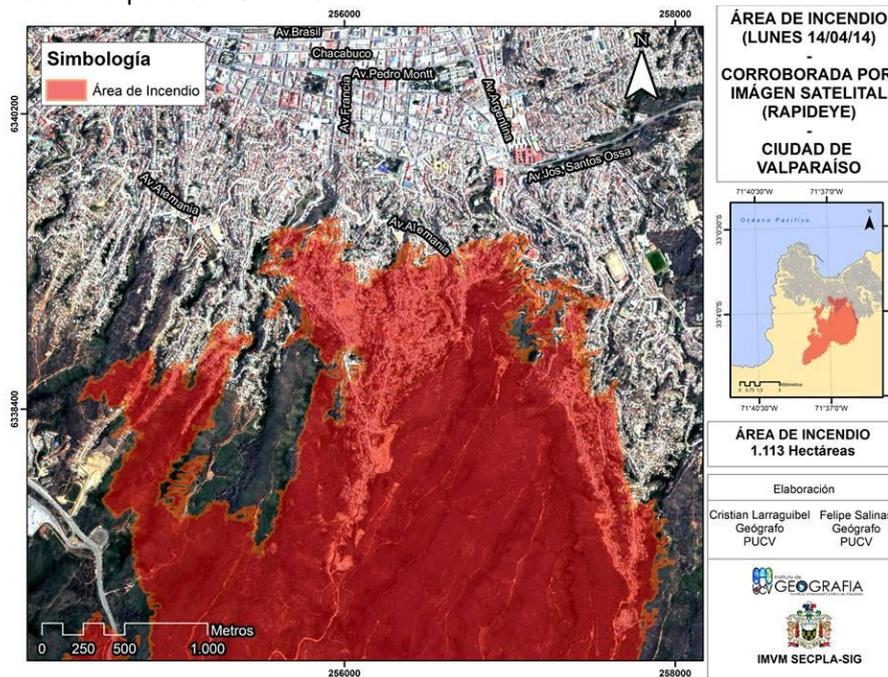
Source: 1. BBC (2014); 2. Latin post (2014) Twitter/Benjamin Cofre Nunez; 3.gofundme Paola Santana; 4-5. alevantarvalpo/facebook; 6. techo.org

## FINDINGS: CHAIN OF PRESSURES RESULTING IN VULNERABILITY TO DISASTERS

### **Hazard Type: Wildfire – Urban fire**

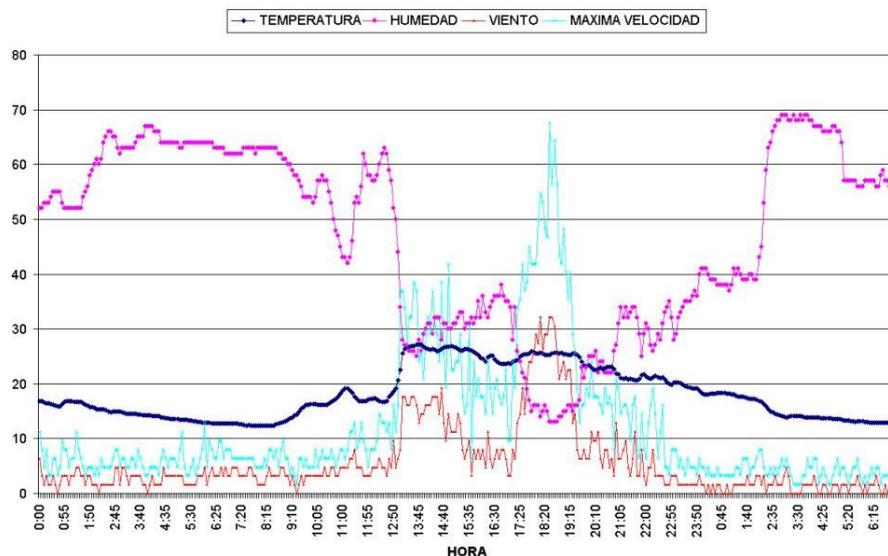
The blaze started as a forest fire to the south of the city (Figure 2) where there are plantations of pine trees and eucalyptus, pyrogenic species that are not originally from Chile but have become common due to commercial forestry activities in the area. Valparaíso has a Mediterranean climate and is dry during this period of the year which, combined with the weather on the day of the fire, generated the conditions necessary for the wildfire to spread easily when the wind blew in direction of the sea, where the city is located. According to data gathered by the meteorological station of the Catholic University of Valparaíso (PUCV 2014), Figure 3 shows a timeline of how temperature increased approximately 10°C in almost one and a half hours before the fire. Humidity decreased at the same time by 35% and wind velocity was 30 Km/hr.

Figure 2. Area of Valparaíso 2014 fire.



Source: Larraguibel and Salinas (2014)

Figure 3. Atmospheric variables measured between 00:00 on April 12<sup>th</sup> and 07:00 on April 13 2014. (Temperature; Humidity; Wind; Maximum wind velocity)



Source: Meteorological station Geography Institute PUCV-CITRE

### ***Unsafe conditions***

Valparaíso is a seaport city which has an urban population of 263,499 (INE 2008). Its urban morphology is characterised by its 42 hills where most of population live. When the fire reached the hilltops of the city it affected the residential areas rather than the port or other services zones which are located in the coastal plains, intensifying the number of potential victims. Another factor from the morphology is the effect of ravines on the spread of the blaze. As the fire consumes grasses, rubbish and material from the houses as fuel, the ravines act as natural chimneys providing enough oxygen to power the fire up.

Even though building types vary, most of the dwellings are made from flammable materials, such as wooden panels for the walls or the beams forming the structure of the houses, even the ones made of concrete. The quality and extension of the dwelling is determined by its location in the hill as well. According to Alvarez (2001) the historical expansion of the city is in the direction of the hills, in a vertical mode starting in the base, then the hillsides and later the ravines and the summit of each hill. The last two elements were often left as unused spaces (because of the difficulty of building there) until the pressure of migration into the city reclaimed that land, mostly at the beginning of the 20th century. Consequently, most vulnerable groups are located in the hills. Several ravines and most of the hilltops are occupied by unplanned wooden dwellings which are built in ledges carved into the hill. Transportation by vehicles is very difficult in these areas, and the city is well known in Chile for the use of stairways as an access system to go up and down the hills. The steps are carved into the hill or made of concrete, usually when a sector is consolidated. Although steps are a bottle-neck during and after an emergency, on normal days they are an effective way to reach to the city centre in a few minutes.

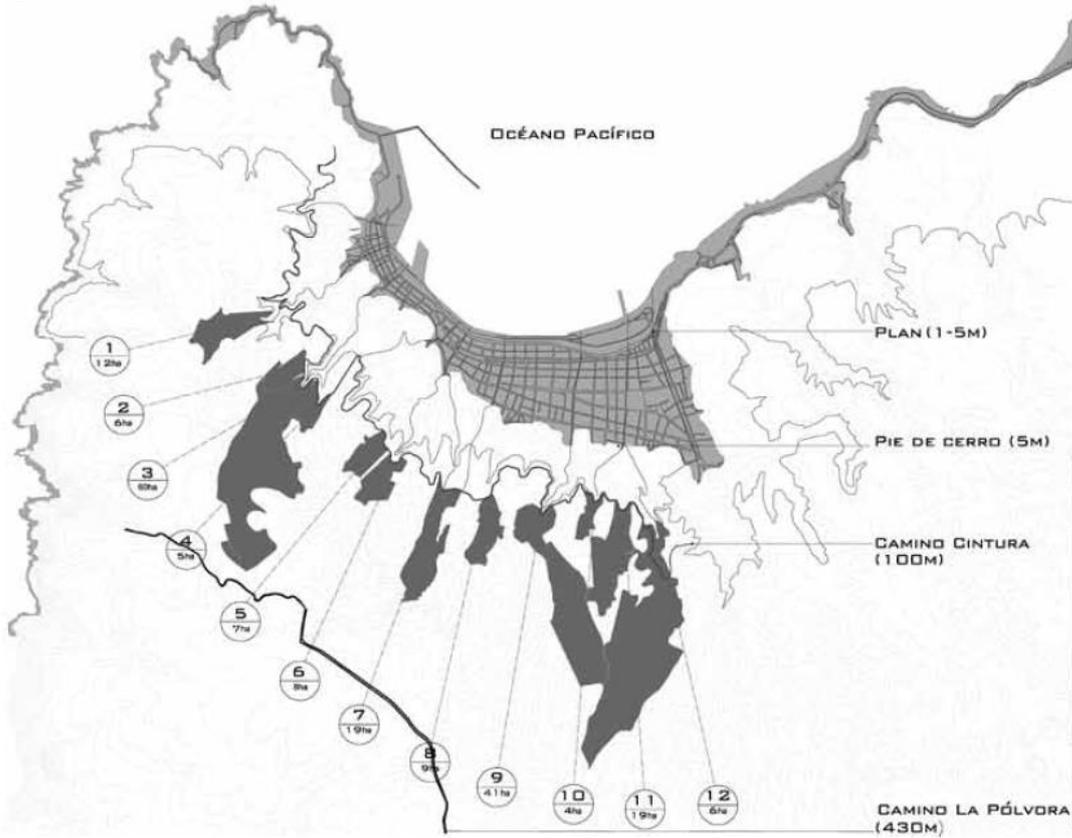
### ***Dynamic pressures***

*Is the occupation of unsafe areas making residents in Valparaíso vulnerable?*

Ravines are by their physical conditions susceptible to fires. As shown in Figure 4, ravines such as Villagra, El Litre or Las Cañas (numbers 10, 11 and 12 in the figure) are extended in the same area where the fire spread (Figure 2). However, Pino and Ojeda (2013) consider that the occupation of ravines is considered an informal solution to the expansion of the city providing affordable housing to its inhabitants. From a planning perspective this type of occupation is an administrative challenge and not recommended because of legal issues and the risk of mudslides as well. Nevertheless, following Pino and Ojeda (2013), I would argue that without this type of development, the vulnerability of people living in these areas would be higher as this would reduce the alternatives for settlement, increase welfare dependency and hold back development of the city.

Urban development in ravines has been driven by illegal settlements called “*Tomas*”, as the action of taking a property or a piece of land that has not been in use by its original owners. In Valparaíso, most of the lands that have been taken are property of the state or old families of the city that have had inherited the space; but this is actually considered as ‘common land’ by the people of the city. The activation of this land as a settlement allows access to services in the city centre within walking distance. Otherwise, the alternative is to apply for council houses that are far away from working places, increasing the transportation cost.

Figure 4. Non-consolidated ravines in Valparaíso



Source: Pino and Ojeda (2013: 113)

Figure 5. Carvajal family property. Urban development in a ravine, El Litre Hill.



Source: Pino and Ojeda (2013: 134)

Ravine dwellings manage vulnerability as well providing a support network based on kinship. Pino and Ojeda (2013) have denominated this occupation practice 'Kinship-based Residential Complex (KRC)<sup>2</sup>'. As rents are expensive to migrant people without a stable job or retired old people living from their pensions, an initial occupation starts to expand to cover the needs of the family. As Figure 5 shows, the initial occupation of a family in 1959 was continued by the expansion of the dwelling in 1971 for the daughter and in 1985 for the rest of the siblings. The practice is so well established that even the granddaughter of the initial settlers had her own space in the property in 1995. This type of residential complex could be defined as the base-unit of the urban development on Valparaíso's hills. Moreover, this should be considered as the historical process of construction of neighbourhoods in the city which in time are recognised and consolidated by the city council and formal planners who extend roads and basic services such as water or sewerage systems. Furthermore, depending on the organisation of different neighbourhoods this process could include the formalisation of the settlement including ownership rights.

Dwellings in ravines are conventionally self-constructed by the family group in a process that can take several years depending on the availability of resources. From a vulnerabilities perspective, this could be taken into account as a capacity of the people living in this space to cope with the effects of disaster. In the Valparaíso fire a number of residents started reconstruction of their homes on the subsequent days which was important given the proximity of the winter and the rainy season in Chile between May and July.

#### *Poverty as a key factor of vulnerability*

Valparaíso has one of the highest rates of poverty in Chile, which within the city is concentrated in the hills that were affected by the fire. On the other hand, according to Brignardello (1998), the groups without socio-economic vulnerability are located in central or historical areas of Valparaíso far away from the wildland-urban interface where the fire spread.

The city has experienced a continuous process of socio-spatial segregation that has been revealed by the fire. Figure 6 shows the density of poverty in Valparaíso. Highest concentrations of poverty are seen in the areas of the fire such as El Litre or Las Cañas hills. Moreover the distribution of these groups is fairly spread indicating profound differences within the population of the city and diversity which is a limitation to planners to identify sensitive cases and design adequate programmes. Living conditions are another socio-economic indicator that could reveal conditions of vulnerability. Figure 8 shows the concentration of overcrowded households in Valparaíso, once again with high concentrations in the affected area. Nevertheless, this condition is not strictly restricted to the affected hills and seems to be a common characteristic spread across the city. Although overcrowded households are not associated with risk during the emergency period, overcrowding has an implication during recovery, given that the loss of assets affects the whole group and not only one individual. This could increase the dependency of residents on aid if financial resources are not available.

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<sup>2</sup> Translation from the Spanish: 'Conjuntos residenciales familiares (CRF)' (Pino and Ojeda 2013: 131)

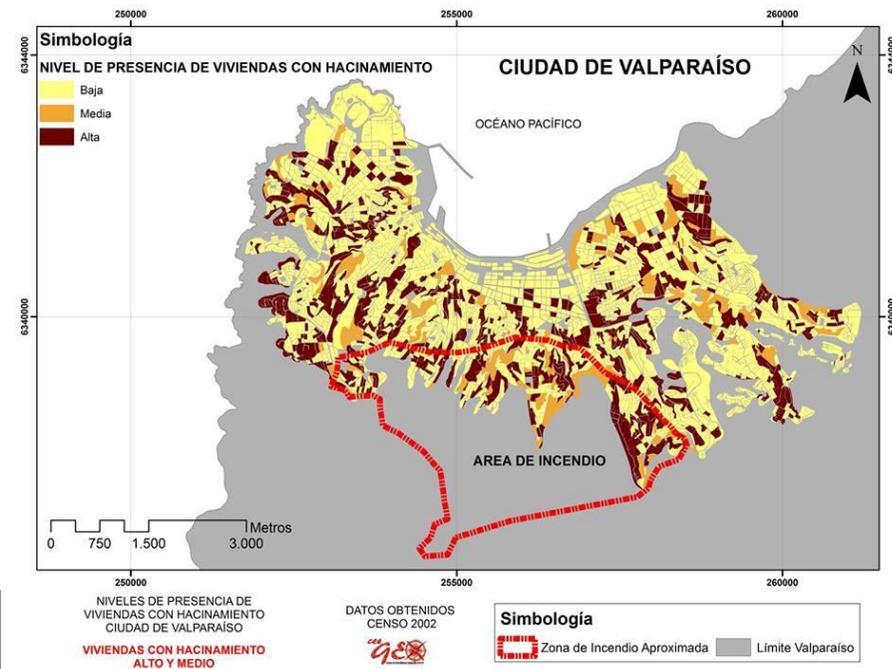
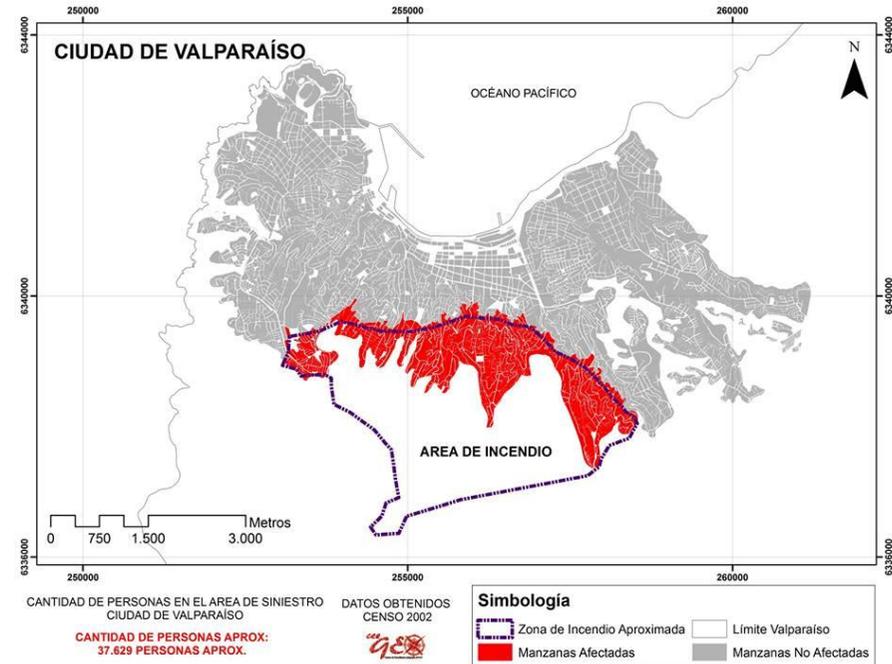
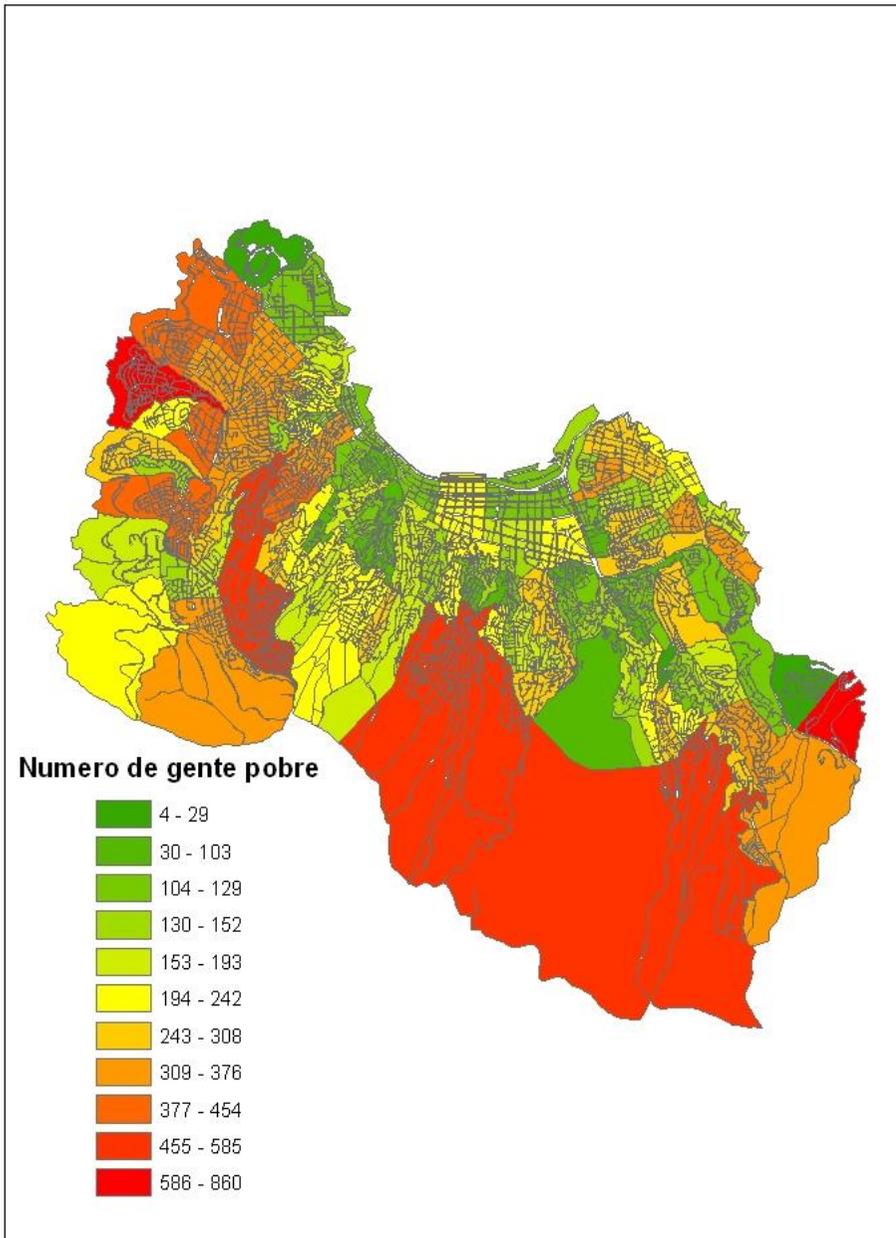


Figure 6 (Up) Poverty density per city block; Figure 7 (Upper right) Extension of Valparaíso fire; Figure 8 (Lower right) Overcrowded households in Valparaíso. Source: Figure 6 (Krueger 2007a); Figure 7 (Salinas 2014a); Figure 8 (Salinas 2014b). Based on census 2002.

## **Root causes**

### *Poor governance and social exclusion*

The fire of Valparaíso revealed a pattern of poor governance related to processes of social exclusion in the city. Several press interviews with the victims in the hilltops mentioned the local council's lack of effectiveness in controlling illegal rubbish dumps which was a factor that intensified the fire. As interviews 1 and 2 show, victims continually declared that they felt abandoned by the council and the central government, preferring the assistance of volunteers and NGOs such as "Techo" which constructs wooden emergency houses. However, what is consistent is a public discourse where residents separate themselves from the politicians who were considered closed off and even a separated political class without contact with the people. There is a sense of *Them* and *Us* among the victims that reveals a strong polarisation between the two groups.

#### Interview 1

"Resident 1: I have been without water for three weeks and you are coming here now only because of this disaster..."

Major: Correct, but did I invite you to live here?

Resident 1: What? ... No, but I came here because I have to. I am poor.

Resident 2: Don't you remember that we told you about the rubbish dump up there? ... and you did nothing. The fuel was up in the hills, up there, and the council did nothing. Rubbish was being dumped here by trucks and the council did nothing.

Resident 1: Go away! We don't want you here. We are with the 'Techo' [NGO], not with the council." (12/04/2014 Radio Biobío).

#### Interview 2

"They [politicians] come here to ask for votes and then they forget... They raise their own wages, they buy computers and even have iphones... please take your congress and take it to Santiago... I pay taxes and they are not even capable of inspecting the water valves for firefighters... Mr. Lagos-Weber [local MP] said that here are only "Tomas", but this is not true ... Here I paid taxes for my house and my neighbours as well." (14/04/2014 National Television TVN)

The governance structure reveals a consistent top-down approach. Interviews with civil servants revealed that they have expertise and knowledge of the problems in the area but are not able to reach decision makers or to get funding for the actions that they know have to be done such as cleaning rubbish. Moreover, the governance problem is not only internal (relating to public services) but is also regional. Interview 3 is with an expert from Santiago, the capital of Chile, who emphasised how wrong people are to live in the hills and that the government has "to show these people", clearly differentiating the status of both groups.

#### Interview 3

"The government is responsible for having allowed homes to be built in dangerous areas, and somehow it has to show these people that they're in a place where their lives are at risk,"

Jonas Figueroa, Architecture, University of Santiago. (15/04/2014 Washington Post)

On the other hand, this statement conflicts with comments from local experts in Valparaíso and civil servants as well. In 2012 there was a similar event as the 2014 fire but on a smaller scale. Since then, civil servants have been stating that the solutions to the problem have to come from the management of the council rather than more complex actions such as relocating the people, which is in line with what residents state. As interview 4 and 5 show, civil servants insist that the poor allocation of resources is a factor of vulnerability which is clearly identified and can be addressed by simple measures to prevent the effect of seasonal fires such as clearing and cleaning sensitive areas within the city limits.

#### Interview 4

"We have a problem: the permanent lack of resources to face an emergency, which is heading us into a disaster. At this moment, all the emergencies are becoming a disaster. Everything affects us: if there is wind, a wall falls; if we have a few drops of rain, mudslides are produced"

Ricardo Valdes, Chief of emergency, Council of Valparaíso (12/12/2012 Ciper)

Interview 5

"We are working with 20 persons to do the weeding in the city. By law, the council has to build firewalls in an extension of 45 Km. However, we have only achieved 5% or 6% of the total. The rest is in standby due the lack of resources"

Ricardo Valdes, Chief of emergency, Council of Valparaiso (12/12/2012 Ciper)

*Inconsistent measures*

Retail store chains have monopolised the market in Chile. This arises as an issue in the period of recovery when the government was able to distribute funds to the victims using a credit card per household. The amount was equivalent to the minimum wage for one month. The card was only available to use in the three biggest retail stores. The measure was criticised by some experts (Interview 6) as a way to increase the profits of big companies that pay their taxes in Santiago. Moreover, local media argued that it would be better to allow the people to spend that money where they liked, which probably would be in local stores owned by residents of Valparaíso.

Interview 6

"What has been revealed because of this process [the fire] is that great companies have increased their profits by 3,000 million dollars and they are not willing to help with donations ... Moreover, they are taking advantage of the situation increasing their sales [because of the fire]"  
Gonzalo Durán, Economist, Sol Foundation.(23/04/2014 HispanTV).

## **DISCUSSION AND CONCLUSIONS**

This case has shown how the pressure and release model (Wisner et al. 2004) can be a useful tool to analyse the underlying social causes that are generating vulnerability in the presence of a natural hazard event. The progression of vulnerability has proven to be quite sensitive to the root causes and dynamic pressures rather than the unsafe conditions related to the location of the city. Therefore, two elements should be highlighted:

### **I. Stakeholder linkages**

Civil servants and experts in Valparaíso have been relatively successful in networking with local stakeholders on a local and horizontal level. However they have a weak capacity for transferring this bottom-up experience to other scales and establishing institutional linkages with the regional and central government. The 'status' of the civil servants and the heterogeneity of their knowledge about the hazards reflected some of Wynne's (1996) work on contextual knowledge. Valparaíso civil servants tended to be well-informed about issues that affected them locally but less well-informed about networks further afield which poses a risk of 'parochialism', revealing the need for a different mixture between bottom-up and top-down approaches of governance (Jones 2014).

Even though NGOs such as "Techo" have proven to be useful partners, this is a non-institutional stakeholder that was the only visible link between the residents managing the effects of fire and the central government efforts. The visibility of this particular NGO is indicative of the preparedness of the country to this specific type of hazard. The fact that their expertise is in building emergency housing is locating the possible measures after the event rather than pre-event mitigation actions.

Contrary to international indicators (Kauffman 2010) that set Chile as a stable and organised country, the perceptions of the residents about the actions of the central government are unclear. However, there are several and consistent signs of distrust of the local and regional authorities that may indicate that the problems in the governance system are inducing a lack of disaster preparedness.

### **II. Building techniques addressing vulnerability**

Although there were some conflicting legal issues with dwellings in ravines in Valparaiso, their design could be considered as an example of the precautionary approach. The UN's definition of the precautionary principle states that 'Where there are threats of serious or irreversible

damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures” (Stirling 2007: 309). Building techniques in Valparaíso are the people’s response to managing their socio-economic vulnerability that otherwise threatened the sustainability of the city. The dwelling construction type of Valparaíso should be seen as a coping strategy to prevent natural hazards from becoming disasters (Beck 2006). Ravine-dwelling reduces the social vulnerability of a city that is primarily dedicated to services in a country susceptible to economic crisis. Moreover, research on the distinction between expert/lay opinions suggests that there is no ‘empirical evidence supporting the assertion that experts judge risk always differently from members of the public or that they are more veridical in their risk assessments’ (Rowe and Wright 2001: 341). The role of the residents’ knowledge was again relevant and should be considered in future plans to cope with natural hazards which in Valparaíso are not only related to wildfire, but earthquakes and mudslides as well.

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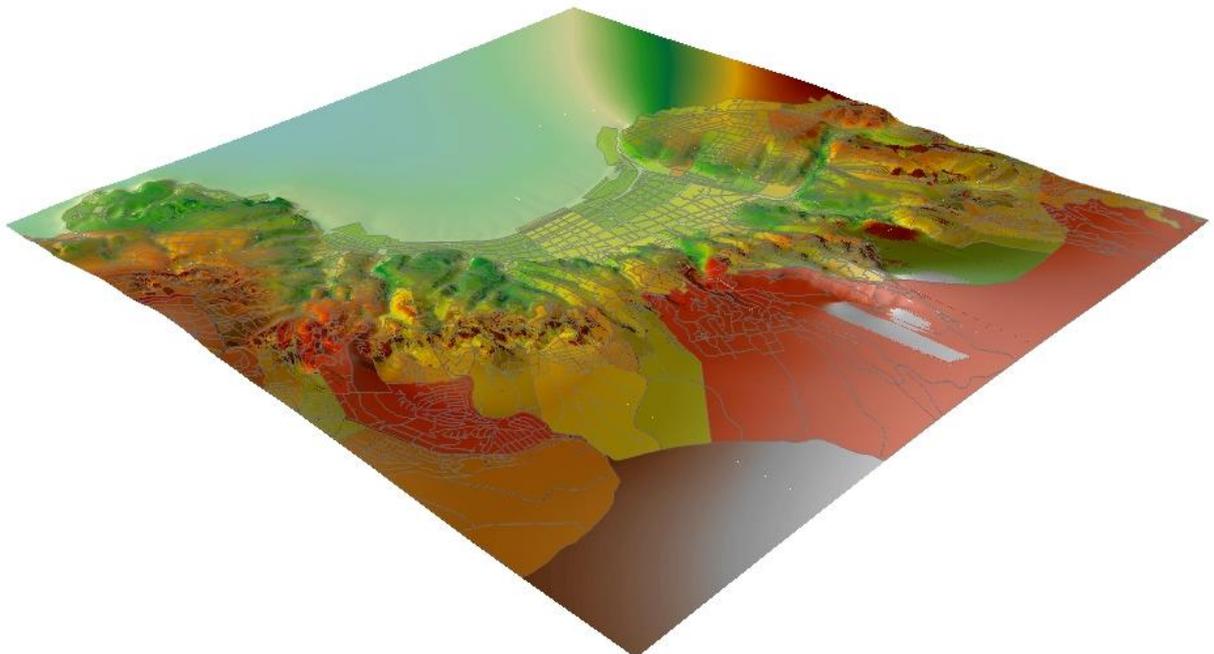
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## APPENDIX

Figure 9. 3D model of Valparaíso 2014 fire. View from the bay.



Source: Salinas (2014c) Based on the Urban Plan for Valparaíso (PREMVAL)  
Figure 10. 3D model of poverty density in Valparaíso. View from the hills.



Source: Krueger (2007b) Based on Census 2002.