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Subjectivity and sustainable livelihood in households affected by hydrometeorological disasters in the Atacama region from Chile

Subjetividad y medios de vida sostenibles de hogares vulnerados por un desastre hidrometereológico en la región de Atacama de Chile

Subjetividade e meios de subsistência sustentáveis em famílias afetadas por um desastre hidrometeorológico na região do Atacama no Chile

José Sandoval-Díaz [1], *ORCID 0000-0001-7247-7113*
Vesna Karmelic-Pavlov [2], *ORCID 0000-0002-5015-1515*
Susy Tello-Cabrera [3], *ORCID 0000-0002-3291-3483*
Marjorie Chaparro-Guzmán [4], *ORCID 0000-0003-1056-7193*
Gianina Gaete-Bastías [5], *ORCID 0000-0001-6980-4689*
Karina Alfaro-Saldívar [6], *ORCID 0000-0002-1024-7475*

[1] *Departamento de Ciencias Sociales, Universidad del Bío-Bío. Chile*
[2 3 4 5 6] *Escuela de Psicología y Filosofía, Universidad de Tarapacá. Chile*

Abstract: The increase of the hydrometeorological risks due the environmental global change has intensified the susceptibility of livelihood in exposed households, leading the need of strengthen agency capacities and local empowerment. According to this, the investigation analyzes a subjective dimension of capacities and livelihoods of households affected by hydrometeorological disaster occurred in Copiapo city from Chile. For this, a qualitative case design was used, and 15 household heads affected by the disaster were selected. The data is produced through an episodic interview, using grounded theory as analysis strategy. The results obtained highlights the (i) tactical coping provisions, and (ii) the articulation between capitals, and opportunities structure in terms of livelihood. We conclude emphasizing the psychosocial aspects of vulnerability-capacity to disasters, as mediating factors between agency and community, state and commercial structures.

Keywords: subjectivity; sustainable livelihood; coping provisions; social vulnerability; hydrometeorological disaster

Resumen: El incremento de riesgos hidrometereológicos, a causa del cambio ambiental global, ha intensificado la susceptibilidad de los medios de vida de hogares expuestos, conllevando la necesidad de fortalecer las capacidades de agencia y empoderamiento local. En función de esto, el presente trabajo analiza la dimensión subjetiva de las capacidades y medios de vida de hogares vulnerados por un desastre hidrometeorológico en Copiapó, Chile. Para esto, se utilizó un diseño de caso cualitativo seleccionando 15 jefe/as de hogar vulnerados por el desastre. Los datos son producidos mediante la entrevista episódica, utilizando como estrategia de análisis la teoría fundamentada. Los resultados obtenidos resaltan las (i) disposiciones tácticas de afrontamiento y (ii) la articulación entre capitales y estructura de oportunidades, en términos de medios de vida. Concluimos con el relevo de los aspectos psicosociales de la vulnerabilidad-capacidad ante desastres, en tanto factores mediadores entre el agenciamiento y las estructuras comunitarias, estatales y mercantiles.

Palabras claves: subjetividad; medios de vida sostenibles; capacidades de afrontamiento; vulnerabilidad social; desastre hidrometereológico

Resumo: O aumento dos riscos hidrometeorológicos, devido à mudança ambiental global, intensificou a suscetibilidade dos meios de subsistência das famílias expostas, levando à necessidade de fortalecer as capacidades de agenciamento e empoderamento local. Em função disso, o presente estudo analisa a dimensão subjetiva das capacidades e meios de subsistência das famílias afetadas por um desastre hidrometeorológico em Copiapó, Chile. Para isso, foi utilizado um desenho estudo de caso qualitativo, selecionando 15 chefes/as de família afetados pelo desastre. Os dados são produzidos por meio de entrevista episódica, utilizando como estratégia de análise a teoria fundamentada. Os resultados obtidos destacam (i) os arranjos táticos de enfrentamento e (ii) a articulação entre capitais e estrutura de oportunidades, em termos de meios de subsistência. Concluímos com o repasso dos aspectos psicossociais da vulnerabilidade-capacidade frente a desastres, como fatores mediadores entre agenciamento e as estruturas comunitárias, estatais e mercantis.

Palavras-chave: subjetividade; meios de subsistência sustentáveis; capacidades de enfrentamento; vulnerabilidade social; desastre hidrometeorológico

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Correspondence: José Sandoval-Díaz: Centro de Estudios Ñuble, Grupo de Investigación en Ciudadanía y Equidad y Departamento de ciencias sociales de la Universidad del Bío-Bío, Chillan, Chile. Andrés Bello 720, Chillán, Chile. E-mail: jsandoval@ubiobio.cl. Vesna Karmelic-Pavlov: Escuela de Psicología y Filosofía de la Universidad de Tarapacá, Arica, Chile. Universidad de Tarapacá 18 de septiembre 2222, Arica, Chile. E-mail: vkarmeli@academicos.uta.cl. Susy Tello-Cabrera, e-mail: tello.susy@gmail.com. Marjorie Chaparro-Guzmán, e-mail: marjorie0601@gmail.com. Gianina Gaete-Bastías, e-mail: gianninagaete@hotmail.com. Karina Alfaro-Saldívar, e-mail: karina.alfaro.saldivar@hotmail.com

Introduction

Mitigation and adaptation strategies facing the environmental global change have strongly positioned in the regional, national and local political institutional agendas (Günther & Gutiérrez, 2017; Intergovernmental Panel on Climate Change [IPCC], 2014). In terms of global impact, considering only the year 2018, climatological disasters affected an amount of 57,3 million persons, leading by floods with an average of 35.4 million of sufferers (UN Office for Disaster Risk Reduction [UNDRR], 2019).

In Latin America (LA), this socio-environmental issue has not only led to the emergency of new risks, such as (i) increase of sea level (ii) heat waves (iii) biodiversity loss, and (iv) intensification of extreme hydrometeorological hazards; but, at the same time, it has deepened and intensified the immanent modernity risks in the region, such as impoverishment, inequality and socio-structural vulnerability (Sandoval-Díaz, 2020; Wisner, Blaikie, Cannon & Davis, 2004).

These intensive/extensive socio-environmental risks have led to the reconfiguration of governance strategies for disaster risk reduction (DRR), shifting the focus from central

governments to the multisectoral strengthening of resilience and capacities at territorial-local scale (Sandoval & Sarmiento, 2018; UNDRR, 2015). This development and strengthening of local capacities would include not only the (i) physical-material, (ii) social-organizational and (iii) dispositional-motivational dimensions (Anderson & Woodrow, 1989, Burkett, 2013; Sandoval *et al*. 2018), but also the adaptative flexibility of practical knowledge, from when, where, and how to deploy this configuration of capacities (Gaillard, Cadag & Rampengan, 2019; Kendra, Clay & Gill, 2018; Rojas & Sandoval, 2020).

At local level, both neighborhoods and households show different degrees of vulnerability-capacities facing the disaster risk process (Berroeta & Pinto de Carvalho, 2020; Sandoval Díaz & Astudillo Pizarro, 2019). For households, the coping capacities deployment will depend both on social practices of access to symbolic/material resources (and their mobilization in form of assets), and on their articulation to the structures of multiscale opportunities, whether State, Market and/or the Community (Arteaga & Pérez, 2011; Rojas & Sandoval, 2020). This dialectical articulation between structure and agency of households, configures lifestyles and livelihood that can be weakened or strengthened in a disaster situation (Marín, Bedoya & Cárdenas, 2015; Räsänen et al., 2016; Rakodi & Lloyd-Jones, 2014).
According with Serrat (2017) the framework of livelihoods (see picture 1) would allow to explore the interaction between the coping capacities of households (in terms of capitals[1]) and the context of social vulnerability in a crisis situation, such as socio-natural disasters itself.

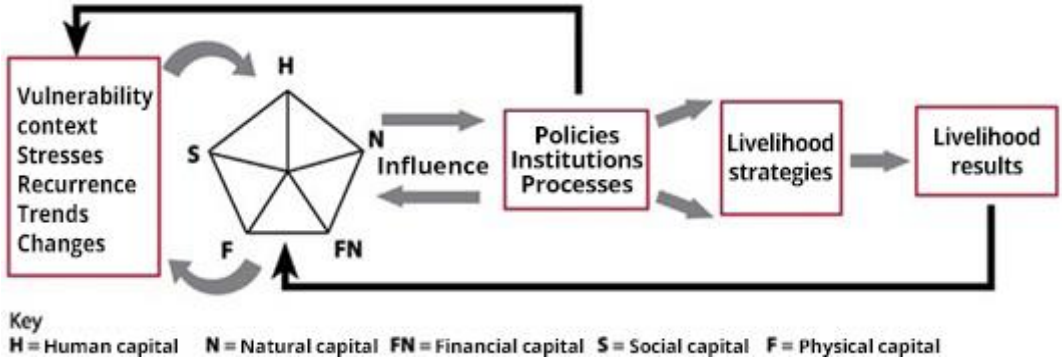

Figure 1.
Framework of sustainable livelihood (SL). Source: Food and Agricultural Organization of the United Nations [FAO] (n.d).

[1] According with Bourdieu (2014) we understand the concept of capital as the set of assets (which integrates, but exceeds the economic-financial resources) which allows agents to participate in a determined field, as informational assets (cultural capital), groups adscription assets (social capital) or symbolic order sociocultural assets (symbolic capital).

Under this framework three centrals components are identified:

(i)*Vulnerability context*: linked to socio-natural and/or antrophic risks production processes, turning susceptible the livelihood of households and exposed communities to these risks.

(ii) *SL Shaping Capitals*: Referred to mobilized base of five assets: (a) *Human:* health level, food and education, (b) *Social:* networks between individuals with shared interests, social participation, and reliance, (c) *Natural*: environmental resources, (d) *Physical*: infrastructure / equipment for basic and (re)productive needs, and (e) *Financial:* monetary resources.

(iii) *Opportunities structures*: Global, regional, national and/or local external processes that influence the shaping of SL, they can be at State, Market and/or Community levels. These institutions include formal, informal, and political organizations and sociocultural practices, as well as the invisible "rules of the game" of societal norms.

In brief, an adaptative coping experience will be linked to the access and interdependent mobilization of capitals at household levels, achieving the sustainability of livelihoods (Marín et al., 2015; Scoones, 2009). In turn, a political and institutional structure that offers Development opportunities will make it easier for households to obtain access to resource/assets needed for its adaptative strengthening (Rakodi & Lloyd-Jones, 2014); in contrast, external factors, such as isolation conditions, severe damage and impeding societal structures, will intensify the susceptibility of communities with less agency to the disaster (Marín, Bodin, Gelcich & Crona, 2015)

However, under this agentive coping of households, there are underlying mediating subjective components facing the social vulnerability, which enable or disable the deployment of tactical-resistant and/or strategic-resilient coping capacities (Arteaga & Pérez, 2011; Sandoval, 2017; Sandoval Díaz & Astudillo Pizarro, 2019). Accordingly, this subjective dimension emerges under a dialectical configuration between senses and affects, triggered by the materialized experience (collective-rational and heartfelt-personal) of disaster risk process, mediating between the deployment of coping practices and/or capacities, and the crisis situation (Arteaga *et al*. 2015; Rojas & Sandoval, 2020).

Based on these records, this investigation aims to: (i) characterize the subjective dimension of coping capacities in affected households by a hydrometeorological disaster, and (ii) analyze the articulation between the capitals and opportunities structures of livelihood in households facing the disaster.

Case study Characteristics: hydrometeorological disaster from March 25, 2015 (25M)

An extreme hydrometeorological event, as a result of a segregated drop associated with rainfall, caused torrential rains in 17 gorges located in Atacama region of Chile. In Copiapó city, these floods washed away a large amount of water, particulate matter and mining tailings, burying the city under a 31 centimeters thick layer of sediment. In terms of impact, 22 fatalities, 28.000 affected people, 2.000 destroyed houses and 5.000 with greater damage were registered, adding an economic impact of more than 46 million dollars (Astudillo Pizarro & Sandoval Díaz, 2019). Regarding the psychosocial impact, the exposed-susceptible groups that presented a significant subjective severity of damage after disaster, were the elderly, people with disabilities/chronic diseases, women, low income and no higher education groups, adding those who were in partial-total damage condition in their homes and didn´t receive any support for housing reconstruction (Sandoval-Díaz & Cuadra-Martínez, 2020).

Methodology

A qualitative case study design was used, defined as the deep and contextualized examination of several psychosocial aspects from disaster, such as the meanings, practices and emerging materialities, from the phenomenological perspective of the heads of household (Coller, 2005; Flick, 2007).

Participants and procedures

Through a cumulative theoretical sampling (Carrero, Soriano & Trinidad, 2012), 15 heads of households were interviewed, who met the following sample inclusion: i) severe damage and/or total home loss due to the disaster, ii) minimum residence time of one year in the region, iii) households composed minimum by two members. In methodological terms we understand household concept as "a group of people who reside together, who contribute and/or benefit from a joint economy or domestic work" (Rakodi & Lloyd-Jones, 2014 p.7).

In procedural terms, the interviews were conducted by the first author to participants in their respective homes or in the post-disaster emergency shelter. The data collection was carried out the first two weeks on April, year 2015(two weeks after 25M), showing an average duration between 45-60 minutes, after reading and signing the informed consent.

Production Strategy and Information Analysis

The episodic interview was used, allowing to deepen in the experience, meanings and practices before the disaster process (Flick, 2007). A thematic guideline was developed based on two organizational criteria:

a) *Temporality:* focused on the risk/disaster process, specifically in the response, emergency and early rehabilitation stages.
b) *Coping Capacities and opportunities structure:* focused on the dispositions, senses and affects that mediated the articulation between capitals and opportunities structures.

After the complete transcription of the interviews, the Straussian codification process of grounded theory was used "oriented to a research work more rooted in the interpretative description than in the construction of emergent formal theory" (Carrero *et al*. 2012, 19). In procedural terms, the codification process was divided in two stages: i) open and ii) axial, using Atlas Ti v7 software as support tool.

Results

The results are divided into two topics: 1) *subjective mediations of coping skills* 2) *configuration of livelihoods*. Finally, each result is accompanied by an axial coding scheme and anonymized textual quotes, identifying a few placeholders, such as sex and age.

1. Subjective Mediations of Social Vulnerability

In the diagram of figure 2, subjective mediations of social vulnerability is the main category. From this affects and senses network, three types of tactical/resistant coping capacities emerge: i) solidarity, ii) family self-management and iii) resignation.

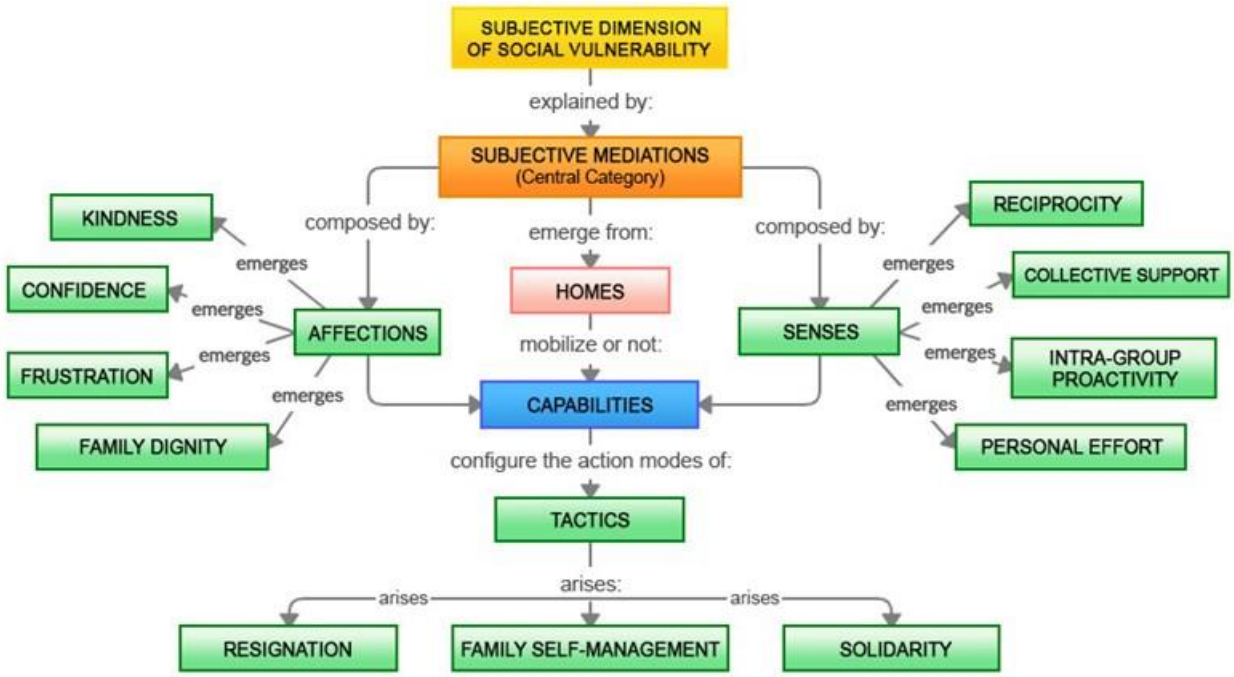

Figure 2.
Subjective Mediations of social vulnerability Source: Made by Saron Monsalves in Atlas ti.7.

1.1 Solidarity Tactic: Deployed capacity to face the emergency, under the subjective senses of "*reciprocity and collective support*". Both senses mobilize the latent resource of "*territorial social capital*" of the Community opportunity structure. In addition, this tactic integrates the temporally effects of "kindness and confidence", which are meant as a *buffer balm in face of anguish* that provide the uncertainly of reconstruction stage.

> I donated all the supplies that I had since the first day, when I returned to the store there were chickens and potatoes, I took them out and donated them. We had a barbecue. I think it was the only shelter that had a barbecue, it was very funny, then everyone started to arrive because of the good smell from barbecue that came out… somehow it was a balm for our anguish, because knowing that they were enjoying a good moment, at least. (Man, 40 years old).
> The solidarity that people have shown, the neighbors that I didn't even know and that I barely looked at from afar. So the solidarity that they have shown worked, it came in handy to cheer me up a little bit (Woman, 25 years old).

1.2 Self-management Tactic: Deployed capacity with a day-to-day survival view, under "*intra-group reciprocity and proactivity* senses." At the same time, this tactic is crossed by practices of "*third party support*" using, as well as the main opportunity structure, both the Market (neighborhood stores) and/or the Central State, despite the perceived bureaucracy towards the last one. The prevailing affect is "*frustration*" facing the intensification of social vulnerability (triggered after the disaster and deepened by government agencies in charge of its management), being poorly mitigated by the "*personal effort*" from the heads of household.

> Unfortunately, the help reactions from the government are very slow, last night they brought me a form to fill out with the damages caused and told me to bring it to the

> community office… I can tell you, I had lost everything, but no matter how I am going to arrange it, I will wake up just to roll out my business. (Woman. 60 years old).
> The system works slow, and in fact, to this day, I only heard for the first time that some help came from the government, I think a toiletries package. Before that, all the goods were delivered by young volunteers and I have to ask for credit at the neighbor's warehouse. (Man, 33 years old).

1.3 Resignation Tactic: Deployed capacity in the sense of "*personal effort*" oriented to recovering lifestyle taken by the disaster. Moreover, the tactic is mediated by the "*family dignity*" affection, which causes that households circumvent the third parties support, wether State or Community, this in order not to be judged as "beggars of government subsidies" (begging), as well as the perceived injustice towards the "pitutos" (useful contact) that third parties use illegally to access benefits. These elements are the key to understand the importance of maintenance, no matter how, of social status by credit debt through the Financial Market.

> I don't like when I go to the municipality, because it looks like I am going around begging… they can get things friends to friends… in other words, people who have "pitutos" (connections); this is why I am telling that the first days I didn't have enough food for my children… I gave them only noodles and that's all… (woman, 45 years old).
> I had no choice to ask for a credit (pay later) in the grocery store. Now I have to use store cards to buy things that were lost (appliances) … you know that life must continue and we haven't other option that keep working (woman,35 years old).

2. SL Configuration

Figure 3 shows the access and mobilization of capitals in three central opportunity structures: State, Market and Community. However, its deployment is conditioned by four barriers of socio-structural vulnerability: a) multi-threat geographic exposure, b) institutional disorganization c) precarious housing infrastructure and d) employment loss. In some cases, these obstacles exacerbated loss and unsustainability of SL, further increasing vulnerable trajectories of household after the disaster.

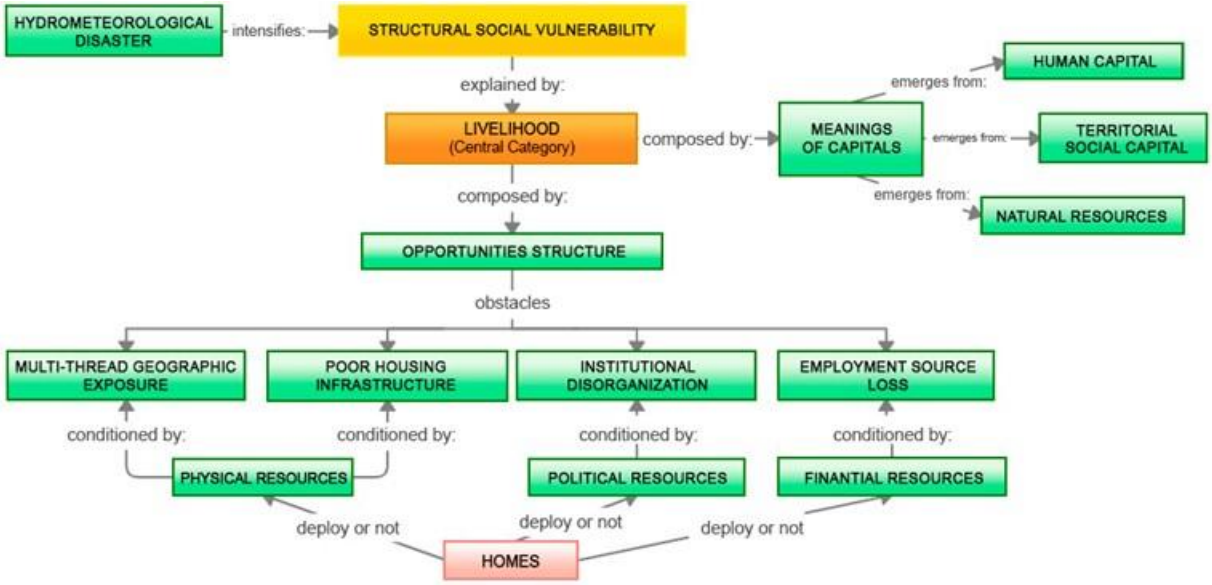

Figure 3.
Configuration of Sustainable Livelihoods of Households. Source: Made by Saron Monsalves in Atlas ti.7.

2.1 Obstacles of opportunity structures

2.1.1 Multi-treat geographic exposure: Prior 25M, Atacama is characterized by being an attractive natural resource territory, which has intensified the opening of transnational/state investment of mining and agribusiness in a large scale (Sandoval-Díaz, 2020). According to Tailing case (n. d.) Atacama is the second region with the largest amount of tailings[2] nationwide, which 30 are active, 108 inactive, and 23 abandoned. This constitute a source of environmental risk for population health, which was materialized in an anthropic disaster after 25M floods, this by mobilizing big amounts of heavy metals, also adding the amount of particulate material activated by wind energy (Cortés & Tchernitchin, 2018)

In other hand, due to an historical absence of national policy in land regulation, some houses (*physical resource*) adjoin with the riverbed, presenting a greater exposure- susceptibility against potential floods.

> I grew up along mining pollution… also we have airbone dust every day due to mining blast (woman, 25 years old)
>
> Unfortunately, I think that am one of the most affected from this street, I have a giant piece of land connected to the river, so when the disaster came from both sides I was locked up on my property, which lead to a major damage… then my store was completely flooded (Man, 40 years old).

2.1.2 Bureaucracy and institutional disorganization: the second obstacle is linked to governmental disorganization (*political resource*) throughout emergency management, which operated the same bureaucratic protocols used in "non-exceptionality" situations (Rojas & Sandoval, 2020). Regarding this, at nationwide level the post-disaster recovery policies have tended to be reduced to their physical-material dimension, in terms of rehabilitation of damaged connectivity structure, as well as housing reconstruction (Contreras & Beltrán, 2015),

[2] Group of wastes from mining processes of minerals concentrations, usually constituted by mixture of ground rocks, wáter and minerals.

understanding household as mere receivers of housing subsidies, thus fracturing the community social capital underlying the affected places (González-Muzzio, 2013).

> From volunteers and neighbors nothing to say, very caring persons, but the government institutions are very slow, I don't know when I will receive my house, I only know that I need return to the SERVIU[3] to apply and do everything again (Man, 46 years old)
>
> You have to queue for everything, for water, to get a noodles packet and with four children and no support it is difficult to deal (Woman, 45 years old).

2.1.3 Precarious housing infrastructure: Atacama ranks at first place nationwide in terms of housing deficit (*physical resource*), equivalent to 18. 962 homes in medium -critical overcrowding and/or in poor sanitation conditions (Cámara Chilena de la Construcción [CChC], n. d). This high percentage would be linked to the sustained increase of families living in next of kin situation, corresponding to 9% of total population (Moreno, 2019). Regarding the disaster impact, the city was under sediment layer of 31 cm thick, reaching two meters tall (see Figure 4)

> 12 persons are living here, my sister's family, my family and my parents… we have been crowded like mice since the beginning of disaster (Woman, 45 years old).
>
> The water was up here (indicates height on the wall) and the mud up there, there are marks you see…what interested me most was use bath and the shower… but they can't be used because they are blocked… a small machine got inside and broke plumbing pipes… it was a disaster (Man, 38 years old)

Figure 4.
Abandoned housing post-hydrometeorological disaster. Source: Picture taken by José Sandoval.

2.1.4 Employment lost: This dimension is relevant for the production of *financial resource* of households SL, showing different degrees of affectation. Those who were the mostly affected are households subject to self-employment, whose employment source is using their home as an asset, using the family workforce (for example, neighborhood stores). Secondly, although salaried families didn't see their income reduced, they did find themselves in conflict between taking care of immediate needs of housing rehabilitation, family organization dynamics and returning to work.

[3] Housing and Urbanization Service of Chilean Government. Spanish acronysm SERVIU

> My store was flooded above the knee, almost reaching the waist and all machinery was left below it. Today we keep cleaning hoping that some machine will be saved… but they are household appliances so it's very difficult because they were under water several days (Man, 40 years old).
>
> Is hard back to normality when your house is a mess, but anyway, I have to return to work, because is the only way to keep going forward at least (Man, 38 years old).

2.2 Capital access and mobilization

The interviewed households have different types and distinct capital degrees, thus configuring different SL options: However, the vulnerability situation after the disaster, and the impeding barriers of emerging opportunity structure, limited their access and mobilization.

First, in terms of *human capital*, households signify physical health as pre-existing impediment, exemplified by familiar chronic diseases background, such as older adulthood, increasing even more after the disaster. In addition, the emergency response stages required a high family self-management, which resulted into a marked physical and psychological wear, in terms of subjective severity (Sandoval-Díaz & Cuadra-Martínez, 2020).

In terms of *collective physical resources*, the community health center (and others public/private health centers), were disabled by floods, delaying the access for those who were awaiting care or in previous treatment.

> I suffer osteoarthritis in this knee and when I was sitting in the truck, I had constant pain in my leg (Woman, 66 years old)
>
> I can't use my wheelbarrow frequently because my arm is broken, my brother suffers epilepsy and my mother is a very old person … truly, I am so exhausted for this situation (Man, 38 years old).
>
> We have been taken "medication" for thirteen days, we are both sick, with flu, now she has just started to get better and until today I was a little more… but we can´t do anything either because CESFAM[4] place is full of mud (Man, 40 years old).

Secondly, the central role from *territorial social capital* is highlighted, meaning those organized actions based on rules and networks, which accomplish resource mobilization and collective responses facing the emergency (Adger & Brown, 2009). For this case, is understood under the social familiar support context, both physical-material and symbolic-emotional, involving different actions, such as (i) safeguarding the lives of its members, (ii) continuous emotional support, and (iii) self-management, and (iv) family empowerment. Along this line, it has been found that prosocial behavior, empowerment, and a community belonging sense, can help to reduce the negative psychosocial effect of disasters (Alvarado, Pradenas, Yáñez, Cuadra & Sandoval, 2019)

> She didn't want to move from there… it was difficult for me to convince her, I told her: "if we are together everything will be okay, we can rise it again", it was difficult but finally I convinced her (hombre, 55 years old).

Third, given the landscape characteristics of the commune, the importance attributed to different *natural resources* emerges. On a territorial scale, the scarcity of green spaces for community recreation is mentioned; while, at familiar level, the "loss of animals" is meant under two senses: the first linked to emotional ties from pets lost after the disaster, and the second linked to small-scale food production (for example, laying hen). According to the last, Sendai Framework for DRR not only focuses on saving lives and protection for physical structures, also includes protecting productive assets, including livestock, work animals, tools and seeds (UNDRR, 2015).

[4] Family Health Centers linked to public primary care in Chile. Spanish acronysm CESFAM

> I had some chickens in a hen house, over there, the poor chickens were stuck in the mud. They couldn´t get out, so my son took them out and put them in a cellar. I still have them in a cellar; one died and the other will die too because it can´t walk with ice in her legs, just those two over there were saved [Pointing the place] (Woman, 66 years old).

Discussion and Conclusions

This article aimed for analyze the subjective dimension of social vulnerability and SL of affected households by hydrometeorological disaster. First of all, households displayed tactical-resistant capacities of *i) solidarity ii) self-management and iii) resignation*, revealing existence of heterogeneous, and sometimes conflictive rationalities, which promote agentive disposition of differentiated actions (Lillo, Prosser, Oróstica, & Pérez, 2018). This active role of subjective affections and senses, although they can´t break the socio-structural vulnerability context, they do enable dispositional empowering conditions of coping that are resistant to risk-disster process (Rojas-Páez & Sandoval-Díaz, 2020; Sandoval, 2017). However, this excessive agency overcompensation counteracts the articulation inability from institutional structures linked to DRR, making it difficult to acquire and/or develop local adaptative-resilient capacities (Sandoval-Díaz, 2020).

Secondly, although households own and access to i) human ii) physical and iii) financial capitals, its deployment was weakened both by the vulnerability intensification after disaster, such as structural-institutional obstacles, perceiving the negative multiplier effect presented by conditions of (i) multi-threat geographic exposure, (ii) precarious housing infrastructure, (iii) employment loss and (iv) institutional disorganization (Marín et al., 2015; Rakodi & Lloyd-Jones, 2014). However, this emersion of vulnerability trajectories was resisted through the deployment of territorial social capital (González-Muzzio, 2013) and the credit market through indebtedness (Arteaga & Pérez, 2011); and lesser extent with state resources, because of its predominant subsidiary role (Arteaga et al., 2015). In institutional terms, the absence of an integrated DRR management system is pointed out (Ugarte & Salgado, 2014) and the overuse of rigid traditional mechanisms facing exceptional situations, such as housing reconstruction (Contreras & Beltrán, 2015).

Therefore, these vulnerability trajectories are characterized not only by the inability to access and mobilize capitals, but also by the lack of choise of alternative SL strategies, being the most impoverished households who adopted survival tactics over adaptative development strategies and/or resilience (Marín et al., 2015; Scoones, 2009)

Regarding the configured livelihoods, the mayor part of households denoted i) *physical resource* in sense of public and housing infrastructure exposed to risk, the ii) *financial resources* as livelihood of supporting family reproduction, the iii) *human capital* linked to health access, while iv) *social capital* was associated with support and family-neighborhood cohesion, and finally the v) natural resources were linked to need for green public spaces and keeping animals. The scarcity of vi) *political resources* was linked both to the low processing capacity that the government structure showed facing what happened, as well as to the absence of collective organizations of civil society to channel different post-disaster demands (Astudillo Pizarro & Sandoval Díaz, 2019; Contreras & Beltrán, 2015; Ugarte & Salgado, 2014).

In prospective terms, these different types of capitals (and their potential configurations in SL), are relevant not only for the adaptation facing the ongoing global enviormental change, and the extreme events that intensifies (Mabuku, Senzanje, Mudhara, Jewitt, & Mulwafu, 2019), but also for the strengthening of risk governance sustained at local-territorial scale (Sandoval & Sarmiento, 2018).

Finally, at working level the following programmatical-political orientations are emerged:

a) Revitalize the SL perspectives facing new and dynamics civilizing challenges, first requiring basic recognition of global enviormental change role on the relationship between society and nature (Günther & Gutiérrez, 2017); and secondly, enriching structural-agency perspective approach, incorporating knowledge production, power, values and political change components (Sandoval-Díaz, 2020; Scoones, 2009).

(b) Considering different factors that influence in SL tactics/strategies choice, where climate change is one of the most stressful dimension that affects exposed communities daily life (Räsänen et ál. 2016). For this, it is relevant to design DRR plans that include psychosocial and subjective dimensions, this under a dialectical-dialogic perspective with the socio-structural vulnerability context (Berroeta & Pinto de Carvalho, 2020).

(c) The need to strengthen coping capacities for DDR, understood as (i) extensions of daily life, and (ii) endogenous and idiosyncratic, in other words they are dependent of sociocultural context (Gaillard et al., 2019); however, this must be accompanied by spatial reduction of socio-structural vulnerability as medium-long-term measure (Astudillo Pizarro & Sandoval Díaz, 2019; Sandoval *et al*. 2018).

(d) Give a high priority education about climate change, socio-enviornmental risks and adaptation strategies, incorporating not only expert's knowledge, but also the wisdoms and socio-cultural memory of and from territoriazed communities themselves (Mabuku et al., 2019; Marín et al., 2015).

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