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NEOLIBERAL URBANISM AND DISASTER VULNERABILITY ON THE CHILEAN CENTRAL COAST

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This paper examines the links between neoliberal urbanism and disaster vulnerability in Cartagena, a town on the Chilean central coast. In recent decades, this area has been transformed by speculative urban development, resulting in environmental damage and increased socio-economic segregation. We adopt a political ecology perspective to consider how these changes interact with disaster risk, drawing on ten interviews with representatives of local community organisations, a collaborative mapping exercise and census data. We find that mass tourism and informal urban expansion contribute to environmental degradation, as well as infrastructural and economic fragility, leading to increased risks for residents and tourists alike. We position our case study against the critiques of vulnerability leveraged by several critical geographers, who have come to see the term as depoliticising. While sympathising with these critiques, we argue for the usefulness of vulnerability analyses combining political ecology approaches to the study of human-nature relations and insight from critical urban studies on issues such as neoliberal planning policies, extractivism, urban informality and touristification. Articulated in these terms, vulnerability can be usefully mobilised to push for substantive policy change.

KEY WORDS: Disasters; Vulnerability; Neoliberalism; Chile; Tourism; Political Ecology

1. Introduction

This paper examines how urban development affects disaster vulnerability on the Chilean central coast, or Litoral Central, specifically in the town of Cartagena. In recent decades, this area has

seen the extensive construction of tower blocks, the apartments within often intended as second homes, resulting in environmental degradation and growing segregation between income groups. Compared to neighbouring towns, urban development in Cartagena has been modest, but the town is affected by seasonal mass tourism. Drawing on a mix of interviews and collaborative mapping, complemented by spatial analysis of census data, we examine the interplay between (formal and informal) neoliberal urban development, mass tourism and disaster risk. We find that the transformations experienced by Cartagena in the past decades have produced social tensions, economic fragility and infrastructural overload, increasing residents and visitors' vulnerability to disasters.

Our research draws on the notion of disaster vulnerability, as developed by the political ecology tradition (Escobar, 1998; Oliver-Smith, 2013; Watts and Bohle, 1993). In this tradition, vulnerability provides a framework to study the social forces that increase disaster risk and selectively mediate its effects. As such, it encompasses many, interconnected factors, including social, economic, political and environmental processes, institutional arrangements and cultural values, making it difficult to provide a comprehensive definition. In mainstream DRR scholarship and policy circles, vulnerability has come to describe the degree to which a community is either susceptible or resilient to harm from hazards. The widespread acceptance and use of the term has certainly eroded its political edge, turning what was an inherently critical concept into a technical word that describes in ahistorical terms a set of characteristics, often attributing them to places and people from the Global South. We therefore sympathise with critiques of vulnerability analysis that warn against the risk of stigmatising certain groups, framing disaster risk as result of their alleged weakness, rather than the product of socio-economic processes and political decisions (Arabindoo, 2016; Arora-Jonsson, 2011; Bankoff, 2001). To our mind, however, these shortcomings largely stem from how vulnerability has been operationalised, especially since the establishment of resilience thinking as the dominant DRR paradigm. A few recent disaster studies contributions have made a similar point (Grove, 2013; Mikulewicz, 2020). But while they have

focused on unpacking the discursive politics of DRR and its instrumentalisation by national government and international aid agencies, here we seek to move towards a 'proactive' approach (Turner, 2014a) to vulnerability, one able to produce analyses more consonant with political ecology's theoretical, political and normative orientation. To this end, we argue, it is urgent for disaster studies scholars to deepen their engagement with the urban studies literature on issues such as neoliberal planning policies, extractivism, urban informality and touristification.

The article consists of six further sections. We start by discussing different ways of understanding vulnerability within the DRR scholarship, underscoring ifferences in how the political ecology tradition and resilience literature conceptualise this term. Furthermore, we observe that vulnerability research about Chile tends to exemplify the technocratic tendencies rightly challenged by critical scholars. Next, we situate the study within the context of Chile's notoriously neoliberal planning policies and urban development patterns, particularly in relation to the Litoral Central. The fourth section introduces our study area and methodology. In the fifth, we present our findings, focusing on the one hand on how mass tourism affects Cartagena and its residents and, on the other, on the importance of informality in the town's past and current transformations. Finally, we reflect on the usefulness of vulnerability research, combining insight from political ecology and urban studies to examine disaster risk and advocate for policy change, referring to the opportunities afforded by the likely formulation of a new Chilean constitution in the near future.

2. Competing Approaches to Vulnerability

Vulnerability is a notoriously 'fuzzy' concept (Virokannas et al., 2018), used with different meanings in fields as disparate as health research (Quesada et al., 2011), development studies (Naudé et al., 2009), and criminology (Chakraborti and Garland, 2012). Even within disaster studies, several approaches coexist. To clarify these different understandings and draw out their implications, in this section we provide an overview of the term's trajectory. We also discuss recent

criticism of the term, arguing that the dominant paradigm of DRR and development, grounded in resilience thinking, favours a postpolitical, neocolonialist approach to vulnerability. The political ecology tradition, we suggest, offers a much stronger basis to conceptualise and study how human-environment relations inform disaster risk.

Vulnerability emerged as a disaster-related technical term in the mid-twentieth century, when scholars, largely working within the natural and technical sciences, used it to refer to a system's condition of susceptibility following a stress, such as a natural or technological hazard. In such a 'physicalist' approach (Pelling, 2001), disasters and hazards are taken to be almost synonymous. A system's vulnerability is viewed as a function of its biophysical characteristics, to be ameliorated through the application of scientific knowledge, such as hazard prediction models, or technological interventions, such as engineering works (Knowles, 2013). Social factors such as poverty may be considered, but only as one of many variables that put some countries or people at greater risk by constraining their choices and mitigation capacities (Bassett and Fogelman, 2013). In many parts of the world, Chile included (Romero, 2015), this understanding remains prevalent, both in academia and policymaking.

In the 1970s and 1980s, social research (Hewitt, 1983; O'Keefe, 1976; Watts, 1983), mostly conducted in the Global South, challenged this approach by illuminating the importance of socio-environmental relations, governance systems and historical processes in the making of disasters. Examining disasters through the lens of political economy and the then-novel field of political ecology, this work reconceptualised vulnerability as emerging at the interface between the physical and social environment. It considered how changes in productive relations result in the dispossession of some groups, reducing their capacity to cope with hazards. This approach proved remarkably fruitful, leading to a wealth of research on the social, economic and political factors required to transform hazards into disasters (Bohle et al., 1994; Watts and Bohle, 1993; Wisner et al., 2003), and on the highly uneven impact of disasters as a result of racial, ethnic, gender and class

inequalities (Peacock et al., 1997; Schroeder, 1993). In the intervening decades, political ecology's structuralist frameworks have been challenged and enriched through engagements with feminist, critical race and postcolonial studies (Sultana, 2020), yet studies of vulnerability from a political ecology perspective have held on to their basic premise: that disasters are produced by people's relationship with their surroundings, a relationship that is directly shaped by socio-economic and political structures.

From the outset, political ecologists sought to influence DRR policy and practice: vulnerability reduction was a realistic goal, arguably more achievable than poverty reduction, and could substantially improve the lives of many (Watts and Bohle, 1993: 44). For some, this meant developing applied vulnerability analysis techniques that would turn vulnerability from a social theory concept into a measurable variable, in ways that appealed to technical scientists, aid agencies and policy makers (Cannon, 1994; Wisner et al., 2003; Wisner and Luce, 1993). These efforts at operationalisation, however, proved fraught: applied to people and places of the Global South, the qualifier 'vulnerable' was soon incorporated into the Western developmentalist disocurse as a form of neocolonialism masked as humanitarian intervention (Bankoff, 2001; Middleton and O'Keefe, 1998).

In the 2000s, the success of resilience thinking transformed once again the predominant understanding of vulnerability and accelerated its uptake beyond the social sciences. Initially developed by ecologists, resilience has been adopted by scholars and practitioners in the areas of sustainable development, urban planning, climate change adapation and DRR, among others. In these contexts, resilience is defined as 'the ability of groups or communities to cope with external stresses and disturbances as a result of social, political, and environmental change' (Adger, 2006: 347). From this perspective, resilience and vulnerability tend to be viewed as complementary opposites, with the latter referring to the internal characteristics of a system or a community that increase its susceptibility to damage when experiencing stresses or changes (Adger, 2006;

Birkmann, 2013; Cardona, 2004). This understanding has come to prevail in mainstream scholarship and international policy documents (UNDRR, 2015), and also informs the Chilean law on disaster management presently under discussion at the senate (Senado, 2020).

While there are clear overlaps between resilience thinking and political ecology (see Turner, 2014b), there are also fundamental differences. More spefically, we argue, resilience thinking offers a much weaker basis for critical research, lending itself to cooptation. As noted by Cote and Nightingale (2012), the systems approach to human-environment relations advanced by resilience thinking lacks a solid theorisation of power and social change. Consequently, vulnerability goes from being the product of structural inequalities (economic, political and environmental) to signaling a lack of adaptive capacity. Vulnerability is taken to be determined by the system's characteristics, without any attempt to unpack the global and internal power relations that shape that system. The focus is on quantifying and reducing local vulnerability levels, rather than understanding how vulnerability is produced at multiple spatial and temporal scales by socio-economic relations (Gibb, 2018), leaving the impression that vulnerability 'falls from the sky' (Ribot, 2013). Ultimately, this turns vulnerability into a postpolitical issue (Mikulewicz, 2019): a technical problem, to be addressed by disaster experts, supported by vaguely defined 'local communities' through targeted interventions (Nightingale et al., 2020). Such analyses are 'reformist' in nature (Bassett and Fogelman, 2013; drawing on Pelling, 2011), promoting pragmatic solutions, such as additional funding for vulnerable groups, educational programmes or housing upgrade schemes, which appeal to policymakers and aid organisations precisely because they do not require structural changes.

There are many examples of reformist approaches in the DRR literature on Chile. For instance, several authors have considered the weaknesses in the country's territorial planning framework. These weaknesses include the privileging of engineering solutions over other planning measures, such as construction restrictions through risk zoning (Herrmann, 2015), the lack of

methodological guidelines and standards for defining risk zones (Martínez et al., 2016), and weak protection for natural buffer zones, especially in rural areas (Villagra et al., 2016). A few studies also draw attention to the link between housing policies, informal urban expansion and disaster risk. Social housing schemes in Chile provide subsidies that allow low-income families to purchase homes provided by the private sector. While moderately successful in reducing the housing deficit and the number of people living in informal settlements, these measures have promoted the development of so-called 'precariopolis' (Hidalgo et al., 2008) – segregated developments, located far from city centres, equipped with only the most basic provisions. Tumini and Poletti (2019) found that, faced with this grim prospect, many people prefer to live in informal settlements in disaster risk areas, trading safety for better access to services and work. Furthermore, according to Castro and colleagues (2015), the focus on constructing new housing leads existing informal settlements into a state of institutional neglect, limiting residents' capacity to mitigate the risk with which they coexist.

Overall, these contributions focus on proposing concrete, short- to medium-term policy changes to alleviate the negative effects of neoliberal urban and economic development, without challenging Chile's territorial governance framework or addressing the economic forces that push for urban expansion in high-risk areas. The subsidiary role of the state in the provision of housing is not questioned, nor is there any attempt to draw on the experiences of countries where robust public housing programmes have helped mitigate disaster risk for vulnerable communities (e.g. Smart, 2006). Tellingly, the words 'neoliberalism' and 'inequalities' rarely feature in the research reviewed here or, if they do, it is to acknowledge that they have not been taken into account (e.g. Castro et al., 2015: 266). More generally, the complex relations between land markets, planning regulations, environmental degradation and disaster vulnerability are presented in simplistic terms, whereby a benevolent but fallible state needs expert guidance to reduce disaster risk.

The question, then, is whether the notion of vulnerability retains any of its usefulness and 'political bite', or whether it is so flawed that we should reject it altogether, as a growing number of scholars suggest (Alvarez and Cardenas, 2019: 228; Arabindoo, 2016: 19–20; Bradshaw, 2019). While we sympathise with these critics, we would argue that the undeniable shortcomings of the vulnerability literature largely stem from how the concept has been framed through the resilience paradigm. With Oliver-Smith (2013: 10), we believe that vulnerability, as theorised by political ecologists, provides 'a conceptual nexus that links the relationship that people have with their environment to social forces and institutions and the cultural values that sustain or contest them', and therefore offers a useful theoretical framework to study disasters multidimensionally, highlighting the mutual imbrication of 'nature' and 'society'. We also argue that, to avoid falling into a depoliticised reading of vulnerability, it is important for disaster studies scholars to consider the historical and political process that drive environmental transformations. One way to do that, as we hope to show through this research, is to engage with the critical urban studies literature.

3. Neoliberal Urbanism and its Impact on the Litoral Central

In this section, we contextualise our research within Chile's neoliberal model, focusing on the country's planning framework and its impact on the Central Coast. The urban studies literature on neoliberal urbanism (Brenner and Theodore, 2002; Peck et al., 2009, 2013) has made a useful distinction between neoliberalism as an ideology, and 'actually exisisting neoliberalism'. As an ideology, neoliberalism rests on the axiom that free, unregulated markets provide the surest, shortest way to socioeconomic development. Accordingly, state intervention and collective organising must be minimised. This recipe for development is assumed to work everywhere, regardless of a place's history, economic structures, and institutional arrangements. By contrast, the notion of actually existing neoliberalism 'draws attention to the contextual embeddedness and path-dependency of neoliberal restructuring projects' (Peck et al., 2009: 50). In other words, this framing underscores how the effects of neoliberal reforms are geographically uneven and much

more varied than neoliberal ideologues purport them to be. The case of Chile, widely renowned as the historical test lab of extreme neoliberalism (Harvey, 2011; Klein, 2008), is a case in point.

In 1973, a military coup replaced the socialist, democratically elected government of Salvador Allende with Augusto Pinochet's neoliberal dictatorship. Pinochet's economic policies were designed by Chilean economists trained in the US, and forcefully supported by the International Monetary Fund. Social opposition to the reforms was violently quashed. Key policy prescriptions pushed through by the regime sought to maximise the privatisation of economic activities, strengthen property rights and minimise government regulations. Democratic elections and civic freedoms were restored in 1990, but the centre-left coalition that ruled the country for the following twenty years was unwilling or unable to subvert the country's economic model, opting instead for targeted interventions to mitigate its devastating effects on lower-income groups (de la Barra, 2011). For the most part, these interventions consisted of market-based solutions subsidised by the state, for example voucher schemes to support the purchase of basic services and housing units supplied by private providers (Pérez, 2017). This phase of 'neoliberalism with a human face' has been largely reversed by the governments of Sebastian Piñera (2010-2014, 2018-present), which have shrunk subsidiary programmes and favoured further deregulation of land use (Navarrete-Hernandez and Toro, 2019). Supporters of neoliberalism credit the dictatorship-era reforms for Chile's relative socio-economic prosperity, turning a blind eye not only to the regime's systematic human rights violations, but also to its legacy in terms of socio-economic inequalities and chronic precarity. The October 2019 social uprising can be partially understood as a call for a clean break with the neoliberal model that still structures the country's economic, legal and social frameworks.

So far as urban policies are concerned, the dictatorship years embedded in law the principle that a free market is the most rational of planners. The 1979 National Urban Development Policy, or PNDU, aimed to create a planning framework coherent with a neoliberal socio-economic model

(Trivelli, 1981). It established that land use should be defined by profitability, assigning the state a subsidiary role centred on the provision of infrastructure and facilities. It also asserted that land is *not* a scarce resource, and that the semblance of scarcity is produced by defective technical and legal restrictions on the land market (Giménez and Gazitua, 2012: 16). According to this logic, it was assumed that residential and agricultural land prices would organically reach a state of equilibrium, posing a 'natural' limit to urban development, without the need for urban development boundaries or usage restrictions. As a result, the poor were forced to relocate into peripheral areas with little access to services, infrastructure and job opportunities. Municipalities became increasingly socio-economically homogenous, just as fiscal decentralisation reforms favoured wealthy neighbourhoods, and municipalities had to take responsibility for public services (Navarrete-Hernandez and Toro, 2019). The resulting inequalities in resources between municipalities are enduring: in 2019, the Observatory for Fiscal Expenditures reported that, in the Santiago Metropolitan Area, the budget per capita in Vitacura, the richest municipality, is 7.9 times that of the poorest, Cerro Navia (Chechilnitzky, 2019). While subsequent PNDUs recognised the state's role in regulating land use and urban expansion (1985), and in promoting social integration and environmental sustainability (2013), it remains the case that urban policies and regulations are considerably informed by these neoliberal principles (Jiménez et al., 2018).

Most studies of neoliberal urbanism in Chile focus on major cities, namely Santiago (Garreton, 2017; Vicuña del Río, 2013), Valparaiso (Zunino and Hidalgo, 2009) and Concepción (Matus et al., 2019), but there exists a vibrant body of research, largely in Spanish, that considers the urban dynamics specific to the litoral central (Hidalgo, Santana, et al., 2016). This area has undergone dramatic changes in the past decades, aptly characterised as *extractivismo inmobiliario*, or 'real estate extractivism' (Hidalgo, Camus, et al., 2016). While extractivism and amenity-based forms of capitalism are generally presented as in competition with one another (Bebbington et al., 2013), for Hidalgo and colleagues real-estate development is also premised on the depletion of natural resources and common goods. Bays traditionally used by fisherman have been transformed

first into resort towns, and, more recently, into clusters of postmodern housing towers, as shown in Figure 1.

Hidalgo, Arenas and Santana (2016) highlight two factors that facilitate these transformations. On a discursive level, the development of the litoral central has relied on the marketing of coastal towns as utopias where perspective buyers will be able to enjoy a renewed relationship with nature – an imaginary that enhances real estate value. This has been aided by the area's cultural significance as *litoral de los poetas* – that is, as summer residences of notable Chilean artists, such as Pablo Neruda and Violeta Parra. From a legal perspective, the development has been enabled by the liberalisation of land markets in the 1980s, particularly the 1980 law on rural properties (*Ley de predios rústicos,* DL 3.516). This law sought to promote the subdivision and sale of large agricultural properties. While prohibiting changes in the agricultural use of these subplots, it allowed the construction of housing units for the landowner and labourers. This created a legal loophole, kickstarting a lucrative market of 'agro-residential plots' and boosting semi-legal urban development around major urban centres such as Santiago and Valparaiso (Jiménez et al., 2018).

Figure 1. The residential complex of San Alfonso del Mar in Algarrobo, perhaps the most iconic real estate development in the Litoral Central. Source: Flickr, photo by lanube360 (CC BY-NC-SA 2.0)

Until the early 2000s, most new developments functioned as holiday homes, while in the years since an increasing number of units have been occupied year-round. To maximise their market, developers offer solutions for most income groups: from luxury flats in exclusive locations by the coast to budget accommodation, far from the sea, to be rented during the summer. This model of urban development produces urban areas segregated along income lines, both at a medium scale, as localities establish themselves as upper, middle or working class destinations, and at a local scale, as affordable housing is pushed further away from the coast (Hidalgo, Camus, et al., 2016). Existing studies suggest that these developments have sparked tensions between permanent and seasonal residents (Alvarado, 2014), and promoted gentrification, due to rising housing prices and changes in local economies that see large restaurants and shopping malls replace traditional small businesses (Luco and Gana, 2013).

Another aspect worthy of further investigation is how these transformations inform disaster risk. Some studies, mostly from a physical geography perspective, have examined the effects of touristification (Paskoff and Manriquez, 1999) and urbanization (Rojas et al., 2019) on the Chilean coast. This research shows that urban expansion, facilitated by inadequate planning regulations, has deteriorated and shrunk local ecosystems that would otherwise serve as important natural barriers against flooding, such as dunes and urban wetlands. Expanding on this work, we argue that the negative effects of neoliberal urban development on disaster risk go beyond the loss and degradation of natural ecosystems. The notion of vulnerability, as developed by political ecology scholars, provides a lens through which to study these relations.

4. Methodology

Our study is part of a broader research project on local participatory disaster governance in Cartagena, a town of 22.700, approximately 100 km from Santiago. Previous studies on the Litoral Central have not focused on Cartagena, perhaps because the town has not experienced the intensive urban growth of nearby municipalities. In this respect, we see our case study as an

opportunity to highlight consequences of neoliberal, real estate-driven urbanism that have received little attention so far. As we argue in the next section, mass tourism in Cartagena closely links to the processes described above, namely an extractivist model of urban and economic development, the marketing of the coast to urban residents, and the creation of a physical and cultural landscape segregated along socio-economic lines.

The study adopts a mixed method approach. First, we draw on census data to characterise urban development in Cartagena, underscoring similarities and differences compared to the rest of the region. The core of our research is based on a collaborative study involving local civil society actors. This consisted of ten hour-long interviews with representatives of citizen committees, as well as environmental and cultural associations. During the interviews, we used sketch maps to discuss the transformations undergone by Cartagena in recent decades, focusing on the area surrounding the wetlands and estuary. We also carried out a half- day community mapping workshop, which included a neighbourhood walk and a mapping exercise followed by a group discussion. The goal was to identify local vulnerabilities and capabilities in relation to tsunami and flood risk, while also keeping an open structure, enabling participants to centre the conversation on the issues they considered most pressing, such as the recent expansion of informal settlements and the effects of mass tourism on the lives of residents. Finally, we complemented these data with field observations from our numerous visits to Cartagena, including a *cabildo* (citizen assembly) held in the aftermath of the October 2019 social uprising.

These interviews and the mapping workshop constitute the first stage of a longer research project on disaster vulnerability in Cartagena. However, due first to the social uprising, and then to the pandemic and prolonged national lockdown, we have temporarily halted our fieldwork. We are aware that the interviews we have carried out so far cannot be considered representative of Cartagena's wider population, especially since our informants had a similar profile: mostly (though not exclusively) middle-class and involved in community organising and environmental protection.

Our findings have likely been affected by this limitation, and we hope to expand our research in the future, for example by including informants whose livelihoods depend on tourism.

5. Cartagena at the Margins of Real Estate Extractivism

This section presents our findings and is divided into two parts. We start by considering how the patterns of urban development described in section two manifest themselves in Cartagena. The town has undergone rapid expansion in recent decades, but at a slower pace than surrounding municipalities. We also found that mass tourism affects residents in significant ways, causing environmental damage, infrastructural disruptions and economic precarity. Secondly, we 'zoom in' to consider one portion of the town located in a tsunami risk-area, tracing its historical development and recent transformations. We highlight how the occupation of this area has been enabled by a mix of loose regulations and 'institutionally-authorised' informal expansion.

5.1 The People's Beach

Research on real estate extractivism has examined how the commodification of the coastal scenery, combined with Chile's market-driven planning framework, has facilitated speculative urban development. Census data helps to get a sense of the scale of this phenomenon, and its impact on Cartagena. In Figure 2, the left map shows the percentage increase in the number of housing units between 2002 and 2017. In some municipalities, such as Algarrobo and Petorca, the growth is as high as 80%; by comparison, Cartagena's 30% increase appears modest. Outlined in white are the *parcela agroresidenciaes*: clearly, many of these are now fully dedicated to touristic accommodation. The right map shows the percentage of houses used as seasonal rentals, according to the 2017 Census. In Cartagena, the percentage of seasonal rentals is slightly lower than in the surrounding municipalities, at 43%, but it is important to underline that this is an average that also includes the large rural portion of the municipality; in some sectors of the town centre, the percentage rises as high as 67%. Beyond these quantitative differences, we also notice that no major housing complexes have been constructed in Cartagena, and the town retains its traditional low-rise

landscape, composed mainly by individual, often self-built houses near the coast, and older villas in the historical centre.

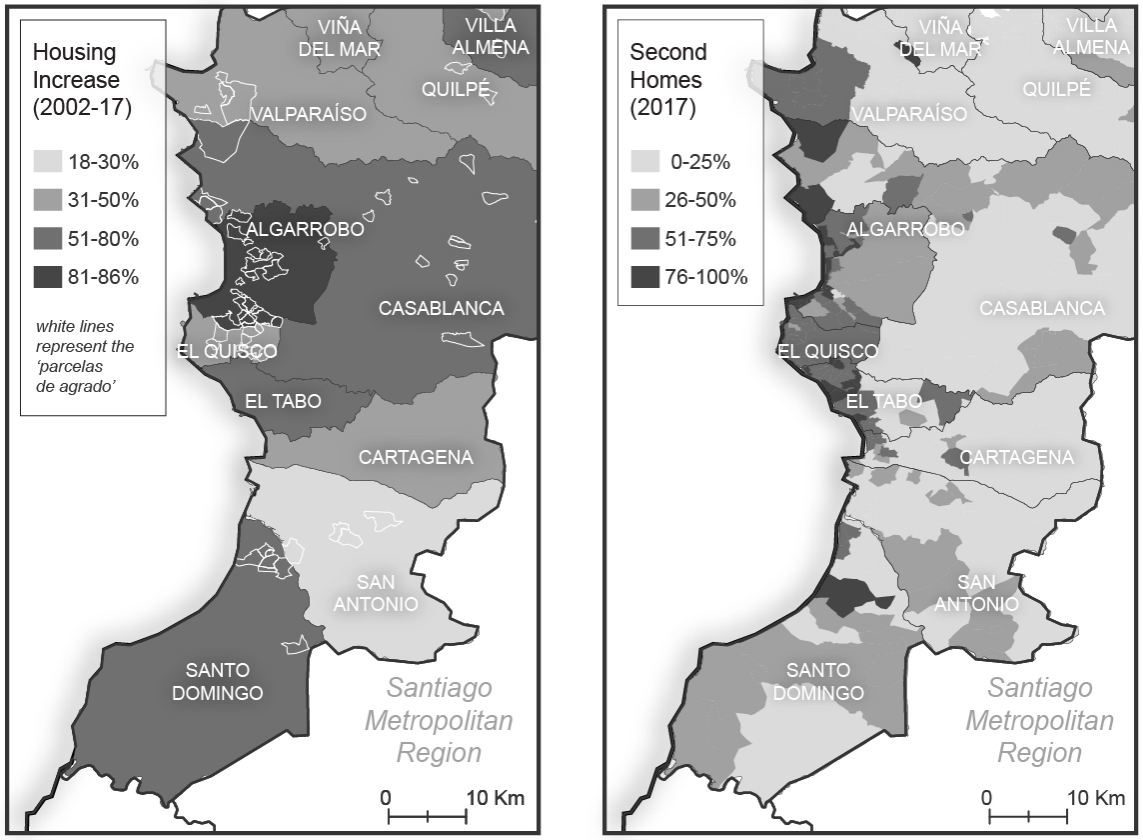

Figure 2. On the left: percentage increase in the number of housing units per municipality, as recorded in the 2002 and 2017 Census. On the right: percentage of housing units only occupied during summer months, according to the 2017 Census.

Some historical background helps to contextualise these data. Cartagena was first developed at the end of the 19th century as a spa town for wealthy families from Santiago. Initially, the town attracted Santiago elites, who viewed the coast as a place for relaxing and healing from the maladies of urban life (Errázuriz, 2016). People migrated from the surrounding countryside in search of job opportunities, finding employment as cooks, child minders, gardeners or cleaners. In the following decades, the socio-economic profile of tourists broadened, thanks to the 1912 development of a railway connection, the growing affordability of cars, and the legal recognition of workers' right to free time (Pino, 2018). Gradually, Cartagena transformed: from exclusive

holiday town, to popular beach for Santiago residents, and, finally, to 'trashy' destination for people of limited means. Thus, in the case of Cartagena, the portrayal of the Litoral Central as natural utopia (see section 3) acquired a strong class connotation that persists to this day, seen in its enduring reputation as 'the people's beach'. While during our fieldwork we have observed a desire to reclaim this working-class identity, Chilean media and popular culture have represented Cartagena and its tourists in largely negative terms: rowdy, cultureless, even outright dangerous. The nickname 'Rascagena', from 'rasca', a derogative word for a person of low socio-economic status, attests to the strength of such associations. Arguably, this negative representation has so far prevailed over the idealised portrayal of the coast as an attractive place for property investment, protecting Cartagena from the real estate speculation experienced in neighbouring towns. At the same time, several interviewees expressed their apprehension about the town's future development, intensified by concerns about imminent changes to the zoning plan.

This does not mean, however, that tourism does not have as big an impact on the town. While nobody would dispute that tourism is vital to the livelihood of many residents, it is also perceived by all of our interviewees as Cartagena's biggest problem, an assessment also voiced during the popular assemblies held after October 2019. It is estimated that, during the summer months of January and February, the population grows from under 23,000 to an average of 400,000 (Valenzuela, 2012). This makes the ratio of permanent population to floating population in Cartagena the highest in the country (Fundación Sustenta Pucón, 2019). This influx of people regularly overwhelms local infrastructures, leading to almost chronic traffic congestion and water shortages. Waste volumes also increase exponentially: according to a local environmental group, one summer week produces the same amount of rubbish as the remaining the ten low-season months. These additional needs comport additional costs: municipal expenditures are reported to increase by as much as 200 million pesos (ca 260,000 USD) per month (Navarro, 2018). These costs are hard to shoulder for the municipality, whose budget depends largely on the income of

residents and local commercial activities, as mentioned in section 3. Tellingly, one of our respondents described the tourist arrival as an invasion that takes over the town:

> *Now you see how we live, really peacefully, because not many people live here, and then December arrives, and people start to arrive. There starts to be more noise, other ways of communicating, screams, rubbish, so the people arrive, and the rubbish arrives. These are people who are not used to cleanliness and environmental care. I mean, for them it's: eat, throw away, buy, buy.*

Even from an economic perspective, informants problematised Cartagena's overdependence on tourism, pointing out that tourist-related businesses can be profitably open for three or four months a year. And that is in a best-case scenario: the summer of 2019-2020 was curtailed on both ends by the October revolt and the Covid-19 pandemic, dramatically affecting the livelihoods of residents. According to our research contacts, the consequent loss of income resulted in a dramatic increase in food insecurity and violent crime. There has also been a marked expansion of informal settlements beyond the area analysed in the case study presented below.

Our overview would not be complete without mentioning the relationship between Cartagena and San Antonio, the provincial capital, located only ten kilometres south of Cartagena. San Antonio, already the largest port in the country, was chosen in 2018 to host a 'megaport', with an anticipated cost of 3.500 million USD and a 10.5 km footprint (Empresa Portuaria San Antonio, 2020). Citizen organizations have expressed their concerns about the environmental effects of the project, as well as its potentially devastating impact on the local small-scale fishing industry (el Desconcierto, 2020). It is envisioned that the megaport will offer new economic opportunities for Cartagena, and drastically increase its population (Alarcón et al., 2019).

5.2 Informal Urbanisation around Cartagena's wetland

Our case study highlights the historical and ongoing importance of informal urban expansion in shaping Cartagena. As Figure 3 shows, the area is located almost entirely in a tsunami risk zone. It

contains several ecological features of great value from an environmental and disaster-mitigation perspective: the dune, wetland and estuary. Dunes contribute to beach stabilisation and erosion control (Martínez et al., 2019), as well as offering evacuation points in the event of tsunamis. Urban wetlands contribute to biodiversity protection and microclimatic regulations. They help mitigate the effects of floods and tsunami, and can work as resources to drain water in the recuperation phase (Narayan et al., 2017; Rojas, 2018). Such value was recognised in 1995, when Cartagena approved its first zoning plan, which identifies these as protected areas.

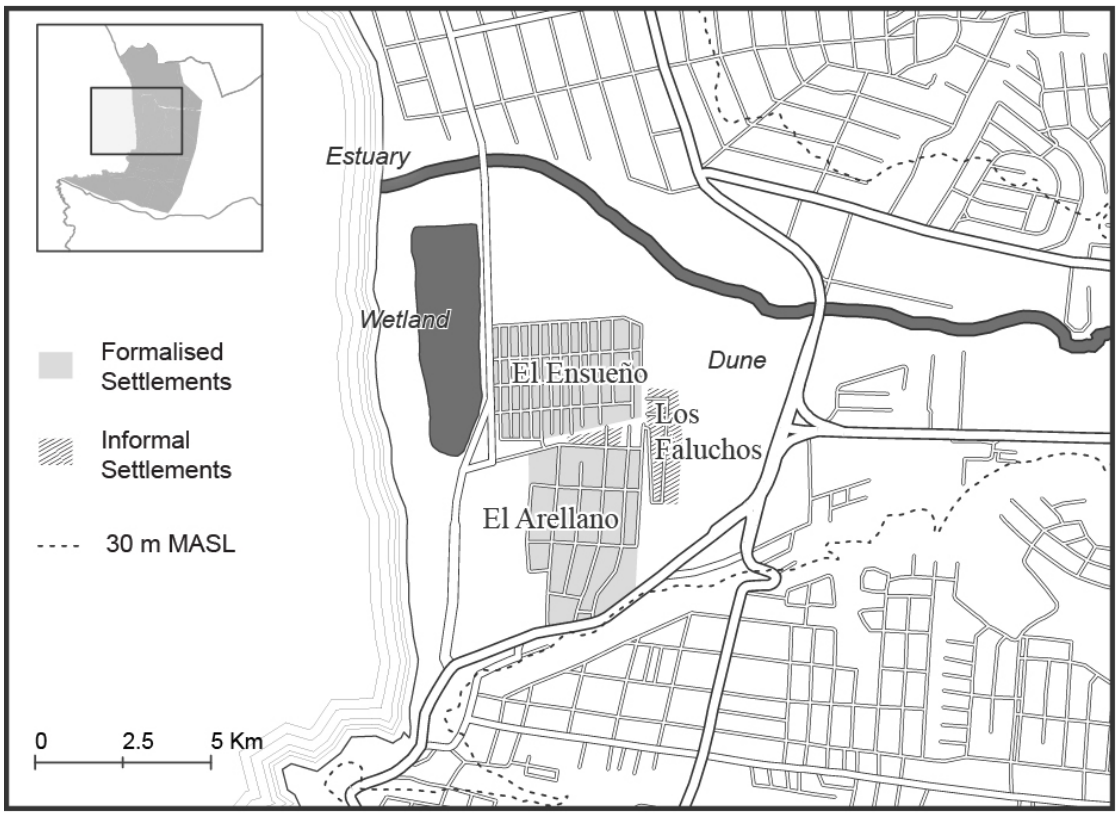

Figure 3. Map of the study area. Areas lower than 30 m above sea levels are considered at risk of tsunamis.

The two main settlements in the area developed informally long before then, starting from the 1950s. El Ensueño began as a campsite for factory workers from Santiago. In the 1970s, in the context of a growing workers' rights movement, occupiers organised into a 'campers association' and lobbied the municipality to obtain the terrain they were occupying. The original tents were

eventually replaced with self-built second homes. Today, the settlement is only occupied in the summer months, with residents spending most of the year in their primary homes in Santiago. The second settlement, El Arrellano, was built by rural migrants attracted by the work opportunities generated by tourism and expanded organically, as second-generation residents built their homes next to their families'. Newcomers did not own the land, which was under control of the *Ministerio de Tierras y Colonización* (renamed *Bienes Nacionales* in 1980), the state institution that manages public assets. In 1954, Cartagena's mayor José Arellano granted residents permission to stay, 'formalising' the settlement, which has carried his name. It was not until 2008 that the settlement was also equipped with paved streets, a connection to the sewage network and street lights (Salgado, 2008). Most residents have since obtained property titles, and negotiations are ongoing, with municipality mediation, to grant property titles to the last fifty families, whose plots are presently owned by the local water company. In the last decade, a third settlement, Los Faluchos, has sprung up to the north of El Arellano. According to one interviewee, occupants relocated to Cartagena after losing their original home in the 2010 earthquake and tsunami, while another suggested most of these new residents only arrived in 2013-14. According to a Ministry of Urbanism survey (MINVU, 2019), Los Faluchos hosts approximately 90 families. More houses have been built informally at the edges of our study area, especially along the side of the Cartagena estuary, often through squatting. Our informants described these recent settlements as unhygienic and polluting, since the lack of a sewage and rubbish collection system results in significant, if localised, harm to the estuary and dune. Newer settlements are also regarded as dangerous, dominated by drug gangs. In sum, despite their informal origins, the three communities are considerably different in their socio-economic profile, level of material neglect, occupancy and level of legality. In all three instances, land occupation was to some degree enabled by municipal authorities in exchange for political support, a theme that featured prominently in our interviews. In the case of the two older settlements, which are by now established as an integral part of Cartagena, this is seen as a source

of pride and legitimacy. An interviewee who has lived in the El Arellano all her life, when asked whether the settlement's land had initially been squatted, replied:

> *It is not quite right…everyone says it was occupied, but it was not. I feel pain when they say that, because in reality the founders never squatted this land. It was always with the authorization of the municipality, obviously, of the mayor.*

When it comes to newer land occupations, however, the same interviewee complained about the clientelist relations with the municipality:

> *And when the land occupation of the people from Santiago started, well, that is when the mayors got involved with the idea of getting votes, they came here and destroyed everything.*

While we do not have any hard evidence of such political bargaining, similar accounts were relayed by several other interviewees, and comparable patron-client relations have long been observed by scholars working in Latin America (Azuela, 1987; Núñez González, 1984).

6. Links between Mass Tourism, Informality and Disaster Vulnerability

Our analysis points to the fact that Cartagena is experiencing a particular facet of the extractivist economic model (Hidalgo, Camus, et al., 2016), marked not so much by real estate development as by mass tourism. Through the process of socio-economic segregation of the Litoral Central, Cartagena has emerged as an affordable destination for people of modest means, who represent no small portion of Chileans (in 2017, the median income was 380,000 pesos, just under 500 USD). Complementing data about these regional trends with qualitative research at the local scale has helped illuminate the significant social and environmental problems caused by mass tourism in Cartagena. In this respect our work confirms and extends the findings of researchers working in nearby municipalities (Luco and Gana, 2013), highlighting weaknesses in planning regulations and their implementations, as well the incapacity of local infrastructure to withstand the pressure associated with the influx of tourists. Furthermore, in Cartagena, a classist discourse represents

tourists as lawless and uncultured, conveniently reframing the problem as a matter of policing and environmental education, rather than profit-driven planning and municipal underfunding. So far, little attention has been paid to how these problems intersect with the construction of disaster risk (but see Babinger, 2012). An obvious link is the fact that the infrastructural collapse experienced by Cartagena and many other municipalities would quickly turn deadly in the case of an emergency evacuation. The economic dependency on tourism also seems to increase the vulnerability of residents, as highlighted by the Covid-19 pandemic. While more research would deepen our understanding of these interactions, rather than simply advocating for disaster researchers to include these as added variables in vulnerability models, we believe it is essential to question the extractivist model of urban and economic development that is transforming this part of Chile.

The implications of these findings go beyond Chile. The notion of 'touristification', understood as a process through which host territories are transformed by tourism, culturally as well as materially (Ojeda and Kieffer, 2020), has gained popularity in geographic research, where scholars have largely focused on the relation between tourism and gentrification (Jover and Díaz-Parra, 2019; Sequera and Nofre, 2019). So far, however, little attention has been paid to how tourism impacts social vulnerability, reconfiguring a place's physical and social landscape in ways that inform disaster risk. Babinger's study (2012) on the touristification of Cancún, in Mexico, is a notable exception, but we anticipate similar links could be observed outside Latin America, notably in South East Asia and Southern Europe.

A second theme to emerge from our case study is the need to better understand the relation between informality and vulnerability. Without a doubt, urban growth encroaching on the dune, foredune and on the edges of the estuary increases disaster vulnerability, disrupting the local ecosystem and putting residents at risk. Several scholars adopting what we have termed a 'reformist' approach have underscored these links, taking a sympathetic but ultimately negative view of informality (Castro et al., 2015; Sandoval and Sarmiento, 2020; Tumini and Poletti, 2019). In such

accounts, informal dwellers are forced into high-risk zones, either because they cannot afford to move elsewhere, or because they rely on local jobs, services or resources. The state's role is to address the 'informality problem' by providing viable alternatives, such as relocation schemes or upgrade programmes entailing DRR measures. Pushing back against this framing, some critical disaster scholars have rightly warned against the use of DRR discourse to legitimise the eviction or state-led gentrification of informal settlements (Alvarez and Cardenas, 2019; Bankoff, 2001), simplistically linking disaster vulnerability to 'poverty'. This work tends to present informal settlements as spaces of resistance to both capitalist relations and state power, in a hostile and antagonistic relation to state institutions and DRR experts. Neither of these lenses, however, is particularly useful in the case of Cartagena, where land occupation is often the result of negotiations between state institutions and squatters. To be clear, such negotiations are extremely uneven, and especially skewed against low-income newcomers; yet they are not necessarily one-sided.

While poverty, informality and disaster vulnerability are interconnected issues, their relations are not nearly as linear as reformist approaches imply. To account for this complexity, discussions of disaster vulnerability in Chile would benefit from deeper engagement with urban studies debates around informality, which have pushed against an understanding of informality as a rigid category, positioned outside or against the realm of legality, planning and order (Roy, 2005; Varley, 2013). From this perspective, informality is a cross-class phenomenon, and one that involves planners, legislators, investors and middle-class property owners, as much as low-income dwellers (Fawaz, 2017). It is often less a matter of resistance to or defiance of legal regulations and property relations, and more a case of bending the rules to different degrees. Once informality is reconceptualised in these terms, the squatting of land in Cartagena appears comparatively more legitimate and 'formal' than the real estate speculations in many other parts of the coast, enabled by quasi-legal practices such as land subdivisions under the 1980 law on rural properties. Here, we notice a striking parallelism in how the category of 'informality' and the category of 'vulnerability'

are selectively leveraged against low-income communities to reject their claims on land and housing. Property developers that build in high-risk areas without complying with planning laws seldom encounter the same level of scrutiny. Nor is the selective leverage of these discursive categories a prerogative of disaster experts, state institutions and powerful economic actors; residents of consolidated settlements in risk areas are also ready to use them to legitimise their position and distinguish themselves from newcomers.

7. Conclusion

In this paper, we have drawn on a political ecology framework to study disaster vulnerability in the town of Cartagena, on the Litoral Central. Building on previous studies of real estate extractivism in this area of Chile, we considered the impact of regional urban development patterns on Cartagena and its residents. In addition to the increased socio-economic segregation and environmental damage observed by previous research, we show that this model of economic and urban development has considerable costs for Cartagena in terms of lowered quality of life, economic precarity and potential dangers in case of a disaster emergency. Second, drawing on a small-scale case study, we reflected on the relation between informality and disaster vulnerability. We underscored that the line between formal and informal development is blurred, as state institutions, landowners and developers also bend planning regulations to build (or enable other people to build) in high-risk areas. Yet, arguments about disaster vulnerability tend to be selectively leveraged against low-income squatters who have only recently settled in Cartagena. Disaster vulnerability studies would benefit from engaging with recent urban studies contributions that reject the binary division between formal and informal development, and from reflecting on how their contributions can be leveraged for dubious political goals.

Critiques of the discursive politics of vulnerability (Grove, 2013; Mikulewicz, 2020) are timely, accurate and necessary. However, there is also a need for DRR research producing politically aware, socially situated explanations of the production of risk, developed through

collaborations with environmental scientists, local experts and residents. We see our research as moving in that direction. Despite the risks of cooptation, we believe the notion of disaster vulnerability, as developed by political ecologists, helps to illuminate the interaction between economic processes, such as the neoliberal relations that enable the extractivist development of the Litoral Central, and environmental transformations, such as the urbanisation of environmentally-protected and/or disaster-prone areas, and disaster risk. Thus, we see an urgent need for vulnerability research linking political ecology's conceptualisation of human-nature relation with the urban studies literature on issues such as neoliberal urbanism, informality and touristification.

To recognise that vulnerability is a problematic term, likely to be instrumentalised and misused, is not the same as to say that we should drop it altogether. While we welcome recent contributions advancing alternative frameworks such as environmental justice (Ryder, 2017), disaster justice (Huang, 2018) or vulneration (Bradshaw, 2019), in an interdisciplinary field such as disaster research, we think there is a value in using a vocabulary shared with colleagues from more technical disciplines, who in our experience tend to be alienated by relentless deconstruction. Given neoliberal institutions' almost unlimited capacity to appropriate and depoliticise potentially emancipatory ideas and concepts (sustainability, freedom and autonomy come to mind), it seems unwise to renounce the pragmatic opportunities to have our research speak to colleagues, citizens and policy makers in the quest for an innocent language.

Discussions around the usefulness of vulnerability analysis link to broader debates on political ecology and its relevance for environmental governance (Blaikie, 2008, 2012; Neumann, 2008; Turner, 2014a). An important idea emerged from these exchanges is that 'relevance' takes many shapes: scholars may directly participate in policymaking, or they may collaborate with environmental activists or marginalised groups, or inspire shifts in how scientists and citizens interpret the environmental transformations they witness and experience. It is especially important

for disaster studies scholars to engage on all these fronts at this juncture of Chilean history, as the country readies itself to write a new constitution. This opens a window of opportunity to tackle the intertwined problems of profit-driven urbanism and disaster risk. The current constitution protects the right to private property, but not the right to housing. It puts the rights of those who own, buy, sell and speculate on residential properties ahead of those who need a place to live. Building standards and planning regulations are kept to a minimum, because the fewer and the weaker they are, the more lucrative the residential market. The consequences are devastating for lower-income groups, who find themselves increasingly less able to afford a house. Meanwhile, real estate projects, often of low quality, are built along the coast in areas of high disaster risk, with little regard for local ecosystems and communities. Many of these complexes are empty for most of the year. DRR experts can play a role in advocating for change: addressing these broader issues is the only way to effectively reduce disaster vulnerability.

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