



# Vulnerability and resistance to neoliberal environmental changes: An assessment of agriculture and forestry in the Biobio region of Chile (1974–2014)



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## ARTICLE INFO

### Article history:

Received 20 August 2013

Received in revised form 15 December 2014

Available online 14 February 2015

### Keywords:

Agriculture and forestry  
Land use changes  
Land dispossession  
Climate change  
Vulnerability  
Resistance

## ABSTRACT

This article examines the dynamics of double exposure, vulnerability, and resistance to neoliberal globalization and environmental change in the Chilean agricultural region of Biobio. By using climatic models and secondary Agricultural Census data from 1997 and 2007, we assess how Chilean neoliberal reforms have, since 1974, facilitated land use changes and forestry investments. We demonstrate that policy changes which incentivize forestry investments have reduced cultivated agricultural lands and native forest, and concentrated land in the hands of global agribusiness corporations. Compounding these issues, Biobio shows a climatic trend towards aridity coupled with an increasing demand for irrigation. Analyzing these conditions, we argue that the neoliberal globalization of regional agriculture under the context of climatic changes has produced a regional space of increasing vulnerabilities and uneven geographical development in Biobio. We particularly demonstrate that the Chilean mode of agricultural neoliberalization has been conducive to land dispossession—to the detriment of traditional agriculture—and has homogenized the biophysical landscape, replacing traditional crops and native forests with exotic species like pines and eucalyptus. We also examine how local producers are using resistance movements to cope with and contest neoliberal environmental changes. We conclude by evaluating the implications of these spaces of agricultural vulnerabilities and local resistances in the context of uneven geographical development at a regional and global scale.

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## Introduction

The premise of this paper is that environmental changes and neoliberal globalization are jointly affecting biophysical environments and socio-political conditions at global and local scales (Harvey, 2005; Smith, 2008; Castree, 2008; Leichenko and O'Brien, 2008). Together, these dynamics of change are significant drivers of vulnerability in agricultural regions. Analyzing a case study of climatic change and neoliberal policies that have instigated land use change in the Biobio region of Chile, we

demonstrate that the entwined impacts of both processes produce differential socio-spatial effects and create uneven geographical outcomes in rural spaces. Globally, these uneven outcomes are generating increasing vulnerabilities for agriculture and its social actors (Leichenko and O'Brien, 2008; Eakin et al., 2013), and are in turn being met with resistance from local people (Bernstein, 2010; Martinez-Alier, 2014; Adnan, 2013).

In Biobio, we analyze the entwined nature of the biophysical and socio-political dynamics of the region, and the relationship between globalized agribusiness corporations and local traditional agriculture historically practiced by peasants, small farmers, and indigenous people. The first group has been expanding through the region because of neoliberal policies driving land use changes, while the latter have experienced a sustained decline due in part to the double, compounding effects of land use and environmental changes. We highlight especially the way in which this dynamic

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<http://dx.doi.org/10.1016/j.geoforum.2014.12.013>

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has both generated and exacerbated deep vulnerabilities and motivated the resistance efforts of local producers. In this context of regional uneven geographical development (Harvey, 2005; Smith, 2008), understanding how the dynamics of environmental changes and neoliberal policies together effect regional vulnerabilities and resistances is of high relevance both theoretically and empirically.

Here, we foreground Biobio in an empirical and theoretical investigation of *double exposures* to the transformative processes of neoliberal globalization and environmental change, emphasizing linkages and feedbacks between the two (Leichenko and O'Brien, 2008: 33, 41; Bolin et al., 2013). As conceptualized by Leichenko and O'Brien, the double exposures framework proposes a mode for analyzing these interrelated processes jointly, drawing from theoretical perspectives ranging from biophysical discourses to political ecology approaches (Leichenko and O'Brien, 2008; Leichenko et al., 2010). We analyze the Biobio case under the critical and transformative lens of political ecology, which takes into account biophysical as well as social and political factors that produce both regional vulnerability and efforts to contest such vulnerabilities (Heynen et al., 2007; Castree, 2008; Robbins, 2012; Malm and Esmailian, 2012; Martínez-Alier, 2014; Adnan, 2013; Basset and Fogelman, 2013).

As one of the earliest global experiments with neoliberalization, beginning immediately “after Pinochet’s coup on the ‘little September 11th of 1973’” (Harvey, 2005: 9), Chile and the Biobio region illustrate broader global experiences of double exposure and associated productions of vulnerability and resistance. The authoritarian neoliberalization of the Chilean nation has included the roll-back of the state, re-regulation (see Castree, 2008), the privatization of public and natural assets, and trade liberalization in almost all sectors of the economy. The neoliberal agenda has also penetrated the agricultural sector. As a result, new foreign and national/local investments have instigated land use changes, promoting forestry industries oriented toward global markets, especially in the south of the country (Kay, 1997, 2002; Gómez, 2005; Pauchard et al., 2006; Aguayo et al., 2009; O’Ryan et al., 2010). Compounding the social and environmental implications of political regime changes, biophysical assessments of climatic change indicate that aridity will increase in north and central Chile and extend to the Biobio region. The pattern of aridity is characterized by a declining trend in precipitation from the north to the south, which may lead to yield reductions for crops and therefore increase the vulnerability of farmers (National Environmental Commission, 2010: 12–14; Ministerio del Medio Ambiente, 2012: 3–6).

Critical political ecology approaches are crucial for assessing regional and agricultural exposure and vulnerability to climate change. These approaches elucidate the political dimensions of change processes, which frequently are not addressed by the biophysical or geophysical literatures concerning vulnerability (Malm and Esmailian, 2012; Basset and Fogelman, 2013).

In Biobio and elsewhere, bringing together critical theory and empirical assessment of the coupled dynamics of change is, we suggest, valuable for understanding the ways harm is compounded by and jointly affects biophysical environments and local people.

In this paper, we assess the dynamics of double exposure and resistance in the Biobio region (Fig. 1) using mainly a comparative analysis of the Agricultural Censuses of 1997 and 2007. This longitudinal method is well suited for understanding how global trends act at the regional scale. Our research question is: how are the processes of neoliberal globalization and climate change affecting political and environmental exposure, vulnerability, and resistance efforts in Chile’s agricultural Biobio region?

The paper is divided in five sections. First, we provide a theoretical background, discussing how double exposures to neoliberal globalization and climate change are increasing community

vulnerabilities, but also driving local resistance efforts (Section ‘Neoliberal environmental changes, vulnerability and resistance’). We then present the methods used to analyze the dynamics of double exposure in Biobio (Section ‘Methods’). Next, we empirically evaluate the double exposure of agriculture in Biobio and its changes, focusing on linkages and feedbacks among the political, biophysical, climatic and social factors that together produce vulnerability, and on resistance that has emerged as a response to heightened vulnerability (Section ‘Double exposures in the Biobio region’). Finally, in Section ‘Conclusion’ we conclude by discussing the implications of these changes for the agriculture and producers of the Biobio region in the context of uneven geographical development.

## Neoliberal environmental changes, vulnerability and resistance

### *Neoliberal globalization*

A variety of perspectives about globalization have propagated over the last decades. According to Leichenko and O’Brien (2008), these can be grouped into three discourses: those that argue globalization is benign, malignant, or transformative. Understandings of globalization as benign are promoted mainly by international institutions such as the International Monetary Fund (IMF) and the World Bank, which argue that processes such as trade liberalization, foreign capital investment, deregulation of markets, the roll-back of the state and the private management of public goods “are a benevolent force that will lead to a greater prosperity” (Leichenko and O’Brien, 2008: 21; Harvey, 2005; Smith, 2008). In Chile, discourses and practices promoting the economic benefits of neoliberalization have been deployed since the 1970s by civil conservatives associated with the Pinochet dictatorship (the “Chicago Boys”),<sup>1</sup> and later by the “Concertación”, the center-left conglomerate of political parties that defeated Pinochet but governed under the neoliberal agenda (1990–2010). Recently, the Chilean neoliberal project has been sustained by the same Chicago Boys School and conservatives under the government of Sebastian Piñera (2010–2014).

In contrast to discourse about globalization as benign, critical theorists, political ecologists and activists around the world depict globalization as malignant and neoliberal. From this perspective, globalization is a negative force leading to the destruction of local livelihoods and cultures, degradation of environments, deep exploitation of labor, and general corporate control that “benefits member of the transnational capitalist class but that disadvantages the poor and working classes” (Leichenko and O’Brien, 2008: 23). Historically in Chile, the negative impacts of globalization have been masked by neoliberal ideologues. Recently, however, social scientists and activists have voiced critiques of the Chilean neoliberal ideology, and resistance movements have begun to emerge. These critical voices have gained strength especially since 2011, when the Chilean student movement rebelled against the inequality produced by the neoliberalization of education (Stromquist and Sanyal, 2013; Atria et al., 2013; Rojas, 2012; Mayol, 2012). There has also been increasing discontent and resistance regarding the Chilean mode of production of neoliberal environments (Heynen et al., 2007; Latta and Cid, 2012).

Notably, in the broader literature on agriculture and vulnerability, discontents and resistances such as those seen in Chile have

<sup>1</sup> “Chicago Boys” refers to the group of right-wing Chilean economists associated with the ideas of Milton Friedman and the University of Chicago, who advised Pinochet’s regime to implement the neoliberal experiment in Chile under the dictatorship. See for example Vergara (1985), Valdés (1995), Moulian (1997), Klein (2007), and Budds (2013).

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