

# Mining, risk and climate resilience in the ‘other’ Pacific: Latin American lessons for the South Pacific<sup>☆</sup>

Anthony J. Bebbington,<sup>\*</sup> Jeffrey Bury,<sup>†</sup> Nicholas Cuba<sup>\*</sup> and John Rogan<sup>\*</sup>

<sup>\*</sup>Graduate School of Geography, Clark University, Worcester, USA.

Email: abebbington@clarku.edu

<sup>†</sup>Department of Environmental Studies, University of California at Santa Cruz, Santa Cruz, USA

**Abstract:** *We suggest the value of considering Pacific Latin America and the South Pacific in relationship to each other in contexts of climate change and investment in extractive industry. The paper explores the interactions between extractive industry, climate change and environmental governance through the lenses of double exposure, double movements, resilience and risk. The first part of the paper addresses the nature and scope of investments in extractive industries in this ‘other Pacific’. The geography of these investments is changing the actual and perceived distribution of exposure and risk in the region. The nature of this risk is also being affected by climate change and its implications for the geographies of water and land-use. Much of the contention surrounding extractive industries can be understood as conflicts over the unequal distribution of this risk, how to interpret its significance and the ways in which resilience might be enhanced to respond to it. The final section of the paper discusses the ways in which mining governance and governance for resilience converge and, on the basis of recent experiences in El Salvador, analyses the difficulties in governing extractive industry in a way that manages risk and builds resilience.*

**Keywords:** *climate risk, El Salvador, mining, Peru, Pacific Islands, resilience*

## Double exposures and double movements

This paper addresses the relationships between two accelerating global phenomena: investment in the extraction of underground natural resources, specifically minerals and hydrocarbons; and climate change. While the paper

focuses on South and Central America, the argument is also presaged on the idea that these phenomena connect the South Pacific and Pacific Latin America in significant ways. Each region is particularly vulnerable to climate change and has significant investment in mining. Indeed, companies based in both regions invest in extracting each other’s mineral resources.<sup>1</sup> There is a case to be made that this mining investment has implications for building resilience in the face of a changing climate.

In these contexts, governing resource extraction can be viewed as a form of governing for resilience under conditions of *double exposure* and *double movement*. The notion of ‘*double exposure*’ (Leichenko and O’Brien, 2008) refers to the idea that places and peoples are simultaneously exposed to economic globalisation and climate change, and that these processes produce vulnerabilities and influence the options that actors might pursue in the face of these vulnerabilities. Importantly, the vulnerabilities produced tend to compound and

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aggravate each other, either because they overlap in space or interact across space. In the case of extractive industry expansion under conditions of climate change, these compounded vulnerabilities are especially related to land and water. Polanyi (1944) introduced the idea of ‘double movement’ to conceptualise the relationship between the processes of deepening commoditisation that characterise capitalist expansion and societal efforts to rein in that commoditisation. That is, the former movement extends the frontier of the market while the latter seeks to moderate this extension and govern its adverse consequences. Asymmetries of power that characterise relationships between national and international institutions as well as between individual actors within countries present a key challenge to effectively governing for resilience under these conditions.

Figure 1 captures these relationships in simple graphical form. New forms of exposure are being driven by global climate change on the one hand, and by increased investment in mining (economic globalisation) on the other hand. This increased exposure demands efforts to govern for increased resilience at a range of levels: from the individual and household through to the national government. The possibility of governing for increased resilience is, however, causally related to the very same investment in the mineral economy driving increased exposure. There are several factors at play here, some of which enhance the governance possibilities whereas others undermine them. Figure 1 notes four such factors: the political settlements (Khan, 2010; Bebbington, 2015; Hickey *et al.*, 2015) within which mineral expansion is occurring; the level of social conflict surrounding this expansion; the fiscal and

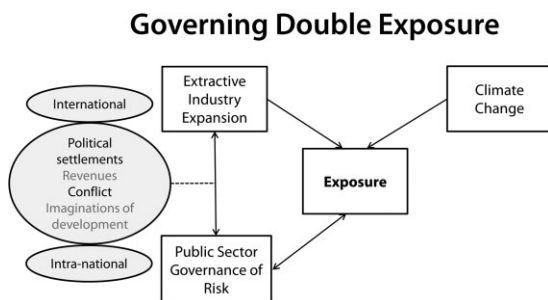
other resources generated by the mining economy, as well as the rules governing who controls access to these resources; and the ideas and imaginations of ‘development’ that undergird and are accentuated by mineral expansion.

The remainder of this paper is organised around the framework presented in Figure 1. In the following two sections, we discuss the two drivers of exposure, climate change and expanded investment in mining, and outline some of the risks that these are producing. The bulk of the discussion deals with Peru and El Salvador, though we also make some cross-references to the South Pacific. In the fourth section, we discuss in more detail how the political and economic relationships surrounding expanded investment in mining can themselves complicate efforts to govern for the risks generated by this same process of intensified resource extraction. We go on to discuss El Salvador’s efforts to govern for resilience in the face of such pressures, focusing particularly on how the national government has approached mining regulation within a more general strategy of environmental governance that seeks to enhance resilience in the face of climate change. The discussion also explores several of the political economy and institutional constraints acting on these efforts. The focus on El Salvador is especially appropriate, given the background interest of the paper in the relevance of Latin American experience to the South Pacific, and vice versa. El Salvador shares particularly severe climate change vulnerability with many parts of the South Pacific, and with respect to many of the same specific areas of exposure (Alliance Development Works, 2012).

We delay further theoretical discussion until the conclusion, where we suggest that in addition to constituting insight into an urgent policy challenge, these efforts to govern mining in ways that respond to climate change suggest the manner in which micro- (Horowitz, 2008, 2010) and macro-political ecologies of resource extraction interact to produce particular regimes of resource governance.

### Climate risk in Pacific Latin America

The World Risk Index (WRI), a collaboration between the United Nations University, Alliance Development Works and The Nature



**Figure 1.** Governing double exposure: A conceptual framework

Conservancy, seeks to rank the world's countries according to levels of risk. Risk is understood as a function of: *exposure* to natural hazards such as earthquakes, cyclones, flooding, drought and sea level rise; *susceptibility* (which depends on infrastructure, nutrition, shelter and economic context); *coping capacities* (governance, disaster preparedness, early warning and medical services etc.); and *adaptive capacities* to deal with climate change and other events (Alliance Development Works, 2012). In 2012, the WRI concluded that of the 15 countries deemed most at risk in the world, four were in Latin America, five were island states in the Pacific and four were in Southeast Asia.<sup>2</sup> The pattern in its 2014 report (Alliance Development Works, 2014: 9) was much the same, with Central America deemed slightly riskier than in 2012, while Fiji no longer figured in the top 15. The 2014 report also identified Peru and Colombia as high-risk countries, partly because of the greater emphasis that that year's report placed on urban risk.

While rankings ultimately depend on how risk is defined and the differential quality of data across countries, the vulnerability of the Pacific Islands, Central America and El Salvador is noted by a variety of other assessments as well.<sup>3</sup>

The World Bank's Global Facility for Disaster Reduction and Recovery (2010), for instance, concludes that fully 88.7% of El Salvador's territory, 95.4% of its population and 96.4% of its gross domestic product are at risk due, largely, to climate change and reduced resilience. Indeed, in 2010, then El Salvadoran President Funes stated: 'We are vulnerable in the first place, to the changing extreme and more frequent natural phenomena that threaten the life of our communities and jeopardize governments' capacity to respond' (Funes, 2010).

As one dimension of the sorts of risks to which Funes was referring, the frequency of extreme rainfall events<sup>4</sup> in El Salvador has increased exponentially since the 1960s (Fig. 2).<sup>5</sup> This increase reflects, in particular, a marked jump in tropical cyclones from the Pacific Ocean. These extreme events have led to catastrophic flooding, landslips and loss of life, and constitute an increasingly frequent destabilising factor in an already vulnerable landscape. For instance, between the 10th and 19th of October, 2011, Tropical Depression 12E dropped 762 mm of rain (averaged across the country): put another way, 42% of the annual average precipitation for the period between 1971 and 2000 fell in one single event. In just

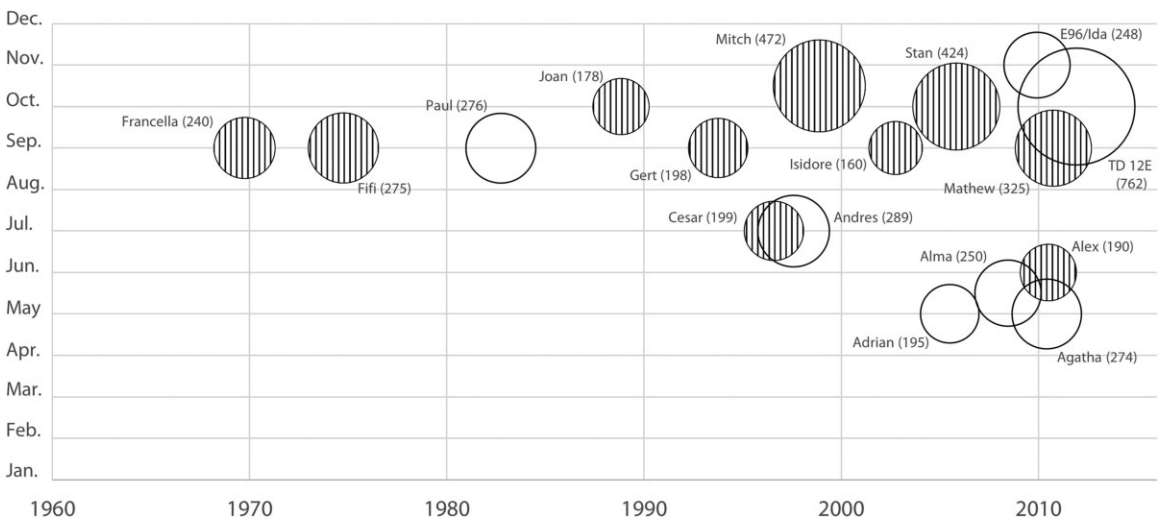


Figure 2. High rainfall event storms in El Salvador, 1960–2014

Source: Based on Ministry of Environment and Natural Resources, El Salvador.

Note: Hatched circles are storms from the Atlantic; blank circles are storms from the Pacific; area of circle is proportional to amount of rainfall which is noted in parentheses in mm, after the name of the storm (the figure refers to average rainfall for that tropical storm across the whole of El Salvador: some local stations registered much higher amounts, and others less).

three events between 2009 and 2011 (Low E96/Ida, Tropical Storm Agatha and Tropical Depression 12E), loss and damage were calculated at \$1267 million (5.9% of 2010 GDP), according to a formal evaluation conducted jointly by the UN Economic Commission on Latin America (ECLAC) and the Government of El Salvador.<sup>6</sup> More than 250 people died in El Salvador during those three events. This trend towards more frequent and more costly, higher magnitude, disaster-related weather events is apparent across Central America. A recent study by Garlati (2013) notes that flooding events in the region increased from around 200 p.a. during the 1970s to over 1100 p.a. in the 2000s: storm and landslide events also showed significant increase over the same period.

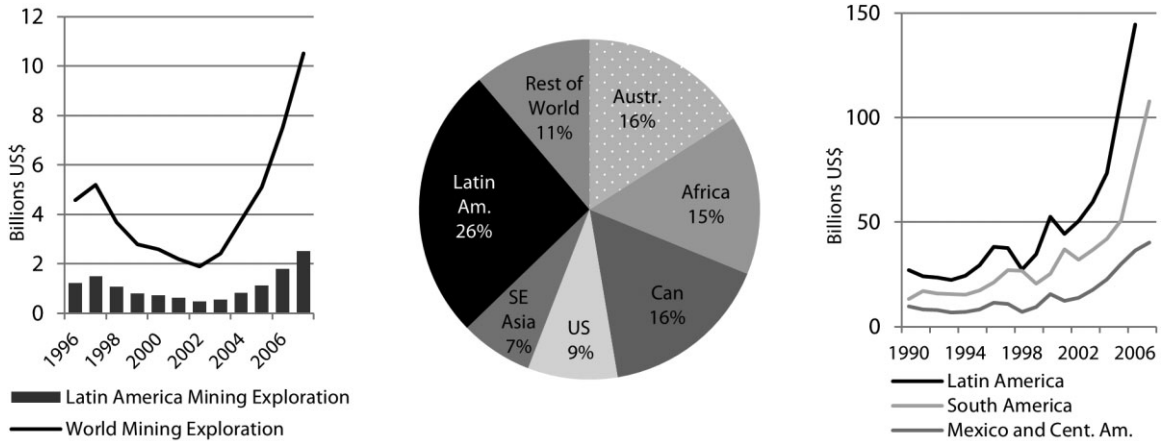
If one source of climate-change-driven risk is episodes of too much water, another is too little water. In a paper dealing with drought in the US South West, Ault *et al.* (2014) estimate the risk of decadal drought as being at least 70% and their data imply that the risks in much of Central and South America are at least as high. Water-related risk is also serious in the Central and Northern Andes, where deglaciation has accelerated over recent decades. Indeed, Peru's Cordillera Blanca has lost 30% of its glaciated area since 1930 and Colombian glaciers have lost 20–50% of their areas (Schauwecker *et al.*, 2014). These are significant losses in a context in which coastal areas – where the bulk of the national population as well as the country's dynamic export agricultural sector are concentrated – depend considerably on glacial melt for water supply (Bury *et al.*, 2013). Meanwhile, the Intergovernmental Panel on Climate Change (IPCC) identifies water availability, drought and flooding as particularly likely risks for South and Central America, together with food insecurity due to drought and increased temperature (IPCC, 2014).

Like the Pacific Islands, then, Pacific Latin America is a region of particular vulnerability to climate change. If in the South Pacific, the primary manifestations of this vulnerability hinge upon sea level rise, coastal flooding and groundwater salinisation, in Central America and the Andes the primary manifestations are a steady trend towards warmer, drier, water scarce conditions and increasingly frequent high magnitude events characterised by heavy rainfall,

flooding and slope slippage. In the following section, we consider how this form of exposure might interact with changing dynamics in the mining economy. The precise nature of this interaction will depend on the ways in which overall tendencies in climate manifest themselves at more local levels (something that is difficult to model with accuracy at finer spatial resolutions) and how the locally specific geographies of exposure to climate change interact with the locally specific geographies of extractive industry.

### **Extractive industry expansion and risk: Peru and El Salvador**

The last two decades have seen a dramatic intensification of investment in extractive industry in Latin America (Bury and Bebbington, 2013). This has been the case for hard rock mining and hydrocarbons alike, though here we focus only on mining. The region now receives around one quarter of global investment in mining exploration, and the value of mineral exports has increased exponentially (Fig. 3; from Bury and Bebbington, 2013). Indeed, most curves associated with the mining sector since the early 1990s have been exponential in nature, whether one is graphing trends in export value, area affected by mining licences, number of mining licences given or number of socio-environmental conflicts related to mining (Bury and Bebbington, 2013). These patterns are repeated at both national and sub-national scales. Rudas Lleras (2012), for instance, has shown that approved and requested mining licences in Colombia grew from essentially no presence in 1990 to covering the larger part of the country's Andean region by 2009 – even before Colombia declared in its 2010–2014 National Development Plan that mining would be the primary 'locomotive' of national development (Göbel and Ulloa, 2014).<sup>7</sup> At a completely different scale, in their analysis of one watershed in Ancash, Peru, Bury *et al.* (2013) report that '[s]ince 1990, more than 90 percent of all recorded mining claims were placed in the watershed. In 2010, there were three large mining operations in the watershed, six new planned projects, twelve mineral processing facilities, and 1848 active mining claims



**Figure 3.** Mining exploration and mineral exports for Latin America 1990–2008 (left: mining investment; middle: average share of global mining investment by region; right: mineral exports)

Sources: Bury and Bebbington, 2013, based on: Barclays, 2009; MEG, 2011; USGS, 2012.

covering approximately 52 percent (6111 km<sup>2</sup>) of the drainage area’.

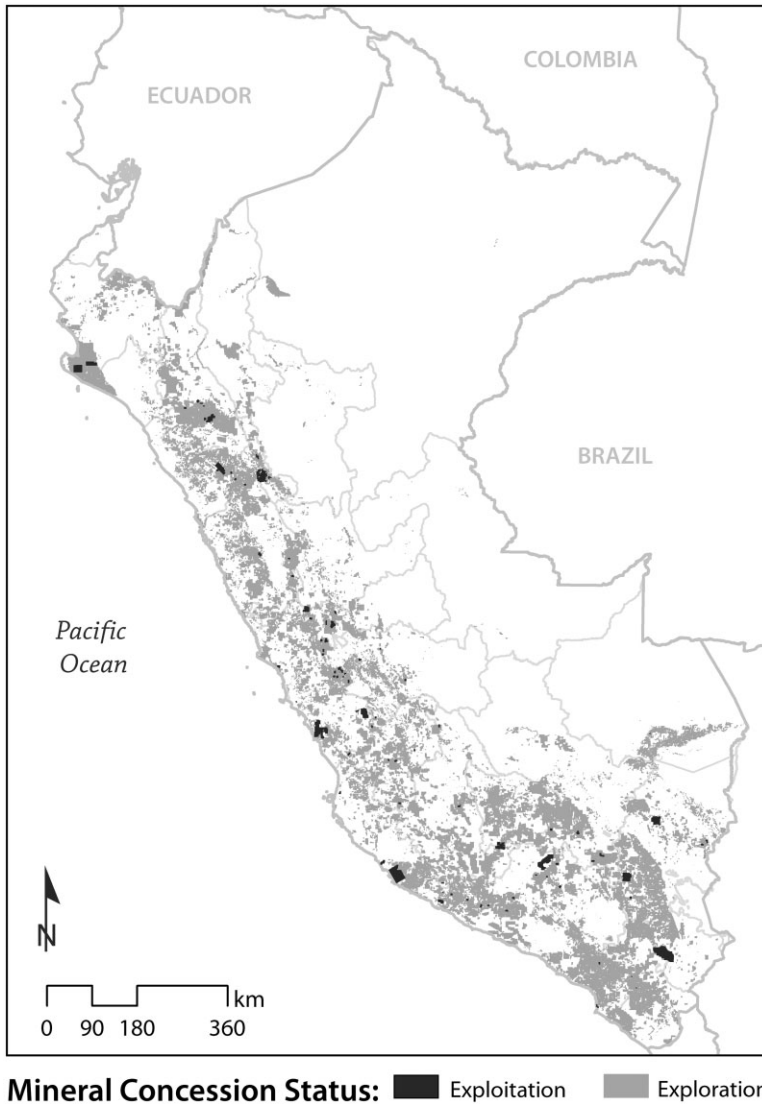
In this section, we discuss how these trends manifest themselves spatially, and in the process, produce forms of risk that interact with climate-change generated risks surrounding agriculture and water. Indeed, the IPCC (2014) identified these as two of the three main climate change risks for Central and South America (the other being an expansion of vector-borne diseases). For reasons of space, we limit ourselves to a discussion of Peru and El Salvador. The former has a long history of mining, while the latter is currently grappling with a possible surge of mining investment, but has little experience governing the sector.

### Agriculture

Peru has experienced a significant boom in mining investment since the early 1990s. By 2013, the country was the world’s third largest producer of copper, silver, tin and zinc, and fifth of gold. Exports of copper, iron, gold and other minerals have accounted for around 60% of the country’s total export earnings, 13% of total foreign investment, 30% of income taxes and 15% of total tax revenues (Sanborn, 2015). Another measure of this growth has been the increased acquisition of mining licences, which grant the holder the subsoil rights required to carry out exploration work. Figure 4 shows the extent of these licences (or concessions) for the whole of Peru.

Reflecting this steady expansion of mining licences, the proportion of agricultural land affected by concessions has also increased significantly, as shown in Figure 5. This graph is based on the national government’s classification of land according to its agricultural potential in the country’s three broad eco-regions: the coast, highlands and eastern rainforest. The proportion of land affected by concessions began to increase significantly in 2002, with another notable rise after 2007. Given that assessments of ‘potential’ agricultural land might overstate the areas affected (given that not all potential land is actually turned to agricultural use), we also assessed the percentage of ‘actual’ agricultural land affected by concessions. This is a more challenging task as actual agricultural land was determined on the basis of commercially available remotely sensed data. These data understate the extent of actively managed agricultural land because it does not pick up grazing land nor that lying in fallow as part of rotational cycles. Nonetheless, the overlaps suggest similar percentages of agricultural land affected by concessions, again with marked increases beginning around 2002 and then again in 2007 (Bebbington *et al.*, 2014).

The extent of these overlaps is significant and speaks to a double exposure that is important both at the national and sub-national level. Such overlaps also speak directly to debates in *Asia Pacific Viewpoint* on ‘contested geographies of coexistence in natural resource management’ (Howitt *et al.*, 2013) contestations that

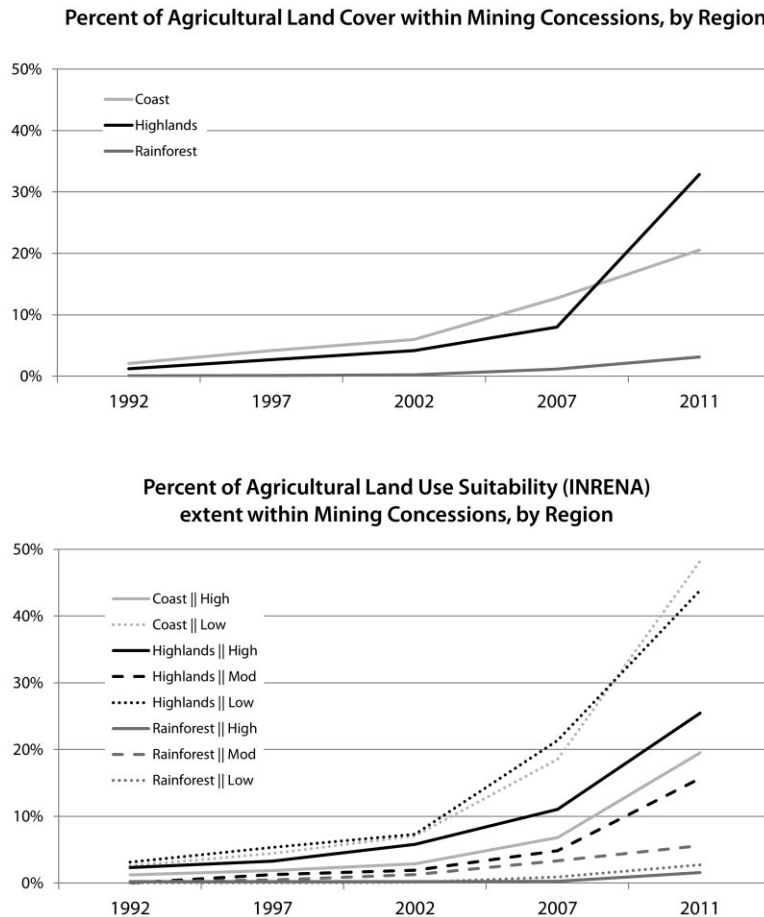


**Figure 4.** Distribution of mining concessions across Peru  
 Source: Cuba et al., 2014.

involved not merely the overlapping of land use claims, but also of ontologies of the environment and landscape (see also Marsh, 2013 and Doohan, 2013). It should be noted, however, that the extent to which the exposure and contestation produced by these overlaps is real versus potential is a point of debate. It could be argued that the mere existence of a mining licence in a given area means very little, given that other forms of land-use and livelihood are only affected in the cases where exploration actually begins, and only significantly affected in the relatively small number of cases in which

exploration culminates in an active mine proposal. This line of reasoning would thus conclude that the geographical reach of the double exposure is limited.

Conversely, if mere knowledge of the existence of a concession changes farmer incentives and practices, then there may be an effect even without exploratory activities being present. Perhaps more significantly, the concession constitutes a legal right to subsurface resources, thus affecting the security of tenure and livelihood of the owners of surface rights. The existence of such concessions indicates the



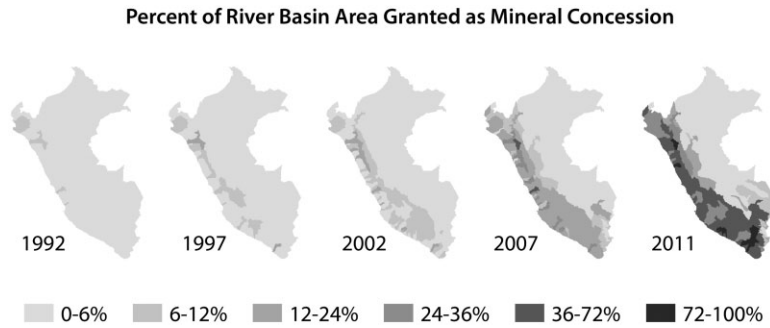
**Figure 5.** Trends in mining concession overlap with areas of agricultural potential in Peru, by region and by level of potential (high, medium, low)  
 Source: Cuba *et al.*, 2014.

willingness of some parts of government to facilitate the expansion of mining activities into the areas so licensed. Thus, even if there is debate about the possible physical effects of a mining licence, the actual geography of concessions tells us much about the functioning and priorities of a planning system.

### Water

Similar overlay exercises can be conducted for water resources, distinguishing between areas at risk of increased competition over resources and areas at risk of contamination of water.<sup>8,9</sup> To assess potential pressure on the water resource base, mining concessions can be overlain onto drainage basin maps to reveal the percentage of basins that have been

licensed for possible mining activity. Figure 6 highlights this issue for the whole of Peru from 1992 to 2011 and reveals that more than 36% of most coastal and highland drainage basins are occupied by concessions, with still higher percentages in other regions of the country. This concession-watershed overlap can, in turn, be overlain with maps of potential agricultural land-use to identify those areas of agricultural production where water resources may become subject to particularly intense competition between agriculture, mining and urban settlements. This implies that in locations with especially significant competition, there might be greater risk of adverse implications for agricultural production and levels of social conflict over water (Boelens *et al.*, 2011; Bury *et al.*, 2013).



**Figure 6.** Percentage of river basins overlapping with mining concessions in Peru  
 Source: Cuba *et al.*, 2014.

Similar patterns emerge from an assessment of the percentage of high Andean wetlands and grasslands (ecosystems that are deemed to be important sources of water for downstream areas) affected by concessions (Bebbington *et al.*, 2014). These patterns are all the more concerning when we take into account that the Peruvian coast is divided between desert, high population areas and the heart of the country's export-oriented agricultural sector. These actual and perceived risks for water resources have been a recurring theme in the growing level of conflict surrounding expansion of the mining sector in Latin America (Bebbington and Williams, 2008; De Echave *et al.*, 2008; Bebbington, 2012; Perreault, 2014).

This potential pressure on water resources is particularly significant in contexts where they are already under pressure from the accumulated impacts of prior human use. According to 2007 data from the government system for monitoring water quality, only 20% of surface water in El Salvador can be potabilised by conventional methods, and fully 76% is not fit for use in irrigation (TAU, 2011). Meanwhile, over the last three decades, river discharge declined by 80% in the north of the country, and by 30 to 50% in the rest of the country (TAU, 2011).<sup>10</sup> These statistics reflect the combined effect of widespread deforestation and land cover change in the country (notwithstanding early indications of some forest rebound: Hecht *et al.*, 2006), as well as of completely underdeveloped systems of municipal and industrial waste and wastewater management. Under such conditions, while the extent of mining concessions is much less expansive in El Salvador (see below)

than in Peru, the risks implied may still be quite significant.

### **Mining expansion and governing for resilience under conditions of climate change**

Climate change and expanded investment in the mining industry have, then, generated both long-standing and new forms of actual or potential risk for different countries in Latin America (and, though we have not discussed it here, the Pacific also: Banks, 2002; Evans, 2010; Adger *et al.*, 2011; Barnett, 2011; Lata and Nunn, 2012; Hoeke *et al.*, 2013; Le Meur *et al.*, 2013a,b). The geographies of these risks overlap and interact such that one can reasonably speak of two levels of double exposure: first, at a country level, as national institutions have to respond to the aggregate and interacting effects of these risks; and second, at the level of specific territories where pressures induced by climate change and mining coincide in space. In some sense, localised conflict and manoeuvres by sub-national authorities reflect efforts to govern these decentralised double exposures, while machinations within ministries, executive offices and other national institutions constitute attempts to govern exposures at a macro-scale. These two governance responses – each elements of a sort of Polanyian counter-movement – interact with each other.

As noted earlier, the nature of these responses, and the extent to which they succeed in inducing new modes of governing for resilience, are in turn causally related in four key ways to the very process of mining expansion that they seek to govern. First, they are related



financially. The extent to which government can invest in building capacities to respond to climate change depends entirely on the revenue available to government (for the case of investment in human development, see UNDP, 2014). Thus, extractive activities can only contribute to a fiscal capacity to respond if they first grow to the point where they generate this tax and royalty revenue for the state. This argument often weighs heavily in political discussions of resource extraction as actors such as Ministries of Finance insist on first promoting investment in order to generate revenue. Governance for resilience thus comes after governance for investment.<sup>11</sup>

Second, any efforts to build capacities to govern for resilience are caught up within the same asymmetrical relations of power within which the extractive economy has expanded. These relations of power – insofar as they have supported and been supported by the growth of resource extraction – are likely to resist governance responses that might constrain this growth. One particularly brazen demonstration of this occurred in 2014, when the Peruvian Ministry of Economy and Finance encroached upon the authority of the Ministry of Environment in order to simplify environmental permissions for mining in the name of economic growth (De Echave, 2014; MEF, 2014). Not all responses will necessarily be so blunt – more often they involve public criticism of, or budget constraints to, environmental regulations or free prior and informed consent (FPIC) requirements.<sup>12</sup> The more general point, though, is that the wider political settlement that made mining growth possible constitutes the same set of political relationships with which any countermovement has to contend.

Third, governance responses are affected by the conflict that often surrounds mineral expansion, as well as, in some instances, longer histories of violence that have imparted certain meanings to more recent conflict around extraction. The relationships between this conflict and governance possibilities are complex. In some cases, the conflict becomes so severe that it challenges the profitability of resource extraction and so elicits institutional change (Bebbington, 2012; Franks *et al.*, 2014). In other cases, conflict may be interpreted through historical lenses (e.g. of terrorism or civil war) that

also affect responses. In El Salvador (see below), the recent history of civil war was interpreted as having left a legacy that further reduced country resilience (GoES, 2010). This interpretation supported arguments favouring more strict regulation of mining. The history of Bougainville in Papua Guinea is another instance where conflict has shaped thinking about mining and any effort to govern it. Similarly, in the Solomon Islands, broad conflict between Guadalcanal and Malaitan militants – including over mining – led to a raid of the Gold Ridge mine in search of weapons and vehicles to use in the fighting (Evans, 2010).

Fourth, efforts to govern for resilience are also affected by the transnational apparatus within which mineral expansion occurs. There are many components to this apparatus, and their weight varies from country to country. They include: the influence and thinking of international financial institutions; the weight of key bilateral relationships and their influence on how companies from that country are governed; the influence and ideas of transnational corporations *and* civil society; and, not least, the transnational legal architecture designed to facilitate foreign direct investment and trade. This last apparatus in particular tends to constrain national sovereignty to strengthen institutions of environmental governance and law.

In the following section, we will expound upon these four causal interactions by analysing recent efforts to regulate mining expansion in El Salvador. Within the larger framework of the paper, these efforts constitute an attempt to address the types of pressure on water resources, agriculture and society that are reflected in the maps that we have discussed above. While those maps helped visualise processes in the Andes, not dissimilar patterns are also apparent in El Salvador. We have chosen to focus the remainder of the paper on governance responses in El Salvador because the case is particularly revealing and one on which we have been able to garner relatively detailed insights.<sup>13</sup>

#### *El Salvador: Seeking resilience against the odds*

We have already noted some of the dimensions of double exposure in El Salvador. While not all

aspects of economic globalisation necessarily aggravate country risk, a mining economy might contribute to ungovernable risk based on the overall level of vulnerability in the country. This has been the case in El Salvador where diverse vulnerabilities have been produced by long histories of inequality and violence, profound transformation of land cover (Browning, 1971; Hecht *et al.*, 2006) and reduction of areas covered by natural ecosystems.<sup>14</sup> These histories culminated in the 1980–1992 civil war that left a heritage of some 75 000 killed, a million or so displaced, and notorious human rights violations (Skidmore *et al.*, 2010). The Peace Accords that brought an end to the war in 1992 addressed a series of political and social concerns, in particular allowing the umbrella organisation of the guerrilla groups, the FMLN, to become a legitimate political party. The accords left untouched the basic neoliberal organisation of the economy and the social control of the state, which remained in the hands of the economically conservative ARENA party from 1989 to 2009.

A series of policy reforms passed after the Peace Accords facilitated mining investment (Spalding, 2013). In particular, a new mining code passed in 1995/1996 and revised in 2001 reduced royalties from 4% to 2%. In 1999, the government passed a new investment law ‘which allowed foreign investors to bring disputes to the World Bank’s International Center for the Settlement of Investment Disputes [ICSID] . . . rather than depend on local courts’ (Spalding, 2013: 27). By 2006, eight international mining companies held investments in the country (Spalding, 2013) and by 2007, the state had granted 29 exploration licences (Cartagena, 2009). One such licence paved the way for the El Dorado mining project in the Department of Cabañas, on the site of a former mine from the 1940s. Exploration began there in 1993, and in 2003 the project was subsequently acquired by the Canadian company Pacific Rim (Cartagena, 2009).

Initial mining activity scarcely appeared on the radar of civil society organisations, but this began to change by the early 2000s, when the Roman Catholic Church and several non-governmental organisations (NGOs) created the National Forum Against Metal Mining (Cartagena, 2009; Steiner, 2010; Spalding,

2013). This platform articulated emerging local conflicts, including in Cabañas, and received important international support from, among others, Oxfam America – an organisation that had for some time been working on mining in Latin America as an issue of rights and livelihoods. Over the next few years, conflicts over mining projects became more intense, and involved both deaths<sup>15</sup> and mobilisations. This led the Minister of Environment of the pro-business ARENA government, Hugo Barrera, to decide in 2007 to stop processing any Environmental Impact Assessments (EIAs) for mining projects on the grounds that the sector had become too conflictive and the impacts were potentially serious. This was not a formal moratorium on mining so much as a decision to cease reviewing project requests. One such unprocessed EIA was that of Pacific Rim’s El Dorado Project. Pacific Rim took this to be a politically motivated and unjustified infringement of its investment rights under both domestic legislation and the Central American Free Trade Area (CAFTA) treaty and on 9 December 2008, filed notice of its intent to sue for damages at ICSID (ITA, 2014). Another company operating in the east of the country, the US-based Commerce Group, did likewise.

By this time, national and local debates over mining had become of such significance that they influenced the language of the national business community and the 2009 presidential election campaigns. For example, a representative of the National Association of Private Enterprise commented, ‘We are not going to go out and support Pacific Rim’.<sup>16</sup> For his part, Mauricio Funes, the presidential candidate for the FMLN, declared that if elected, he would ban metallic mining in El Salvador. On 15 March 2009, Funes was elected in what was a historic first victory for the FMLN; six weeks later, on 30 April 2009, Pacific Rim served the government of El Salvador with notice that it was taking its complaint to arbitration (Crowell and Moring, 2009).

Funes was hardly the only successful presidential candidate in Latin America to have made campaign commitments to act assertively against mining and mining companies. Alan Garcia and Ollanta Humala in Peru, and Rafael Correa in Ecuador, have each made similarly stern commitments only to shift their stance

once in office and become staunch supporters of mining (Bebbington, 2009). Such a shift was, however, not so easy for Funes because, regardless of what his personal commitments may have been (and they may well have been sceptical of mining), he did not share the same room for political manoeuvring that his peers had enjoyed. A TV host, he had not made his way up through the ranks of the FMLN, but had instead been chosen as the party's candidate because of his electability. Once in office, he therefore needed to continue building legitimacy with members of the party who were sceptical of having a journalist rather than a former guerrilla as their candidate. The need to build this legitimacy was particularly pressing because Funes began government with a cabinet that included many similar non-militant technocratic members. This was, then, a governing apparatus of which the party bases were sceptical but which at the same time needed the party in order to act legislatively. These party bases were, moreover, largely opposed to mining. Funes had to listen.

At the same time as working through a response to this national mining conflict, Funes' cabinet had to worry about a stalling post-crisis economy suffering from sharp declines in the volume of remittances sent home by Salvadorans living in the United States (the country's main source of foreign currency), growing unemployment coupled with serious gang violence,<sup>17</sup> a domestic entrepreneurial elite that distrusted Funes and on whom he depended for investment, and not least, the brewing case in ICSID. It fell largely to the Ministers of Environment and of Economy to work out how to handle the mining question in this context, though they had to do so in a way that would be endorsed by Funes and his two Prime Ministers.<sup>18</sup> Both ministers<sup>19</sup> were former researchers/academics and neither belonged to the FMLN. At a personal level, they doubted that opening up a mining economy would be sensible for the country; they had the sense – one more intuitively, the other more analytically – that the environmental risks would be too great. However, the broader political economy context – and especially the arbitration at ICSID of Pacific Rim's complaint that the Government of El Salvador had violated their investment rights under CAFTA and Salvadoran law<sup>20</sup> – did not allow for

legislation that would immediately appease the demands of the FMLN bases and anti-mining movements. Legal and political calculations indicated that a quickly passed law banning mining would weaken El Salvador's position in the arbitration because it would lend credence to Pacific Rim's assertion that the government's refusal to process the company's EIA had been arbitrary and politicised rather than technically grounded. At the same time, such a law would convey to the national capitalist class that the FMLN government was disposed to override contractual commitments when politically expedient. Such a message would only increase the likelihood of the class boycotting investment, which the government could ill afford. In the light of such calculations, the ministerial team opted to commission a Strategic Environmental Assessment (SEA) of the whole mining sector (a process that had been initiated under the ARENA government) on the grounds that this would provide an independent, technical view of the risks and benefits associated with mining and that this technical view could serve as the basis of any subsequent legislation (Achtenberg, 2011).

If the SEA was affected partly by these calculations, it also went ahead in a context in which the new Ministry of Environment (MARN)<sup>21</sup> was actively fostering national and cabinet debate on the climate change risks facing El Salvador. The Ministry was aided in this effort by nature itself – in particular the flurry of high magnitude rainfall events and associated human tragedies and economic losses that occurred in the first two years of the new government. These storms made clear that El Salvador's landscape was vulnerable to landslides and severe flooding in the face of high magnitude events. The experience further endorsed the minister's view that risk management (*'gestión de riesgos'*) should be the key theme underlying the ministry's work. More broadly, the minister adopted an explicit strategy to insert risk management into the language used by the president's economic team,<sup>22</sup> on the grounds that it should be at the core of any development policy for the country. Indeed, the country's five-year plan noted the need to 'rebuild the social and productive fabric that has been damaged by natural phenomena, and to build an effective system for civil protection, early warning systems and capabilities to

prevent and manage risks across the country' (Gobierno de El Salvador, 2010: 54).<sup>23</sup> Risk and its reduction continue to be visible themes in the most recent five-year plan (Gobierno de El Salvador, 2015).

The SEA was put out to tender and won by a Spanish consulting company that then compiled a team including mining economists, biologists, social scientists, lawyers and organisational analysts. Many members were based outside the country, so travel complicated coordination both within the team and with the Ministry. In addition, team members were not of the same mind on mining and ranged from true believers to radical skeptics. At the same time, the team had to negotiate its reports with an oversight committee that had to endorse their quality, if not agree with all of their contents.<sup>24</sup>

These negotiations were not always straightforward, as opinions differed on costs, the nature of evidence required to substantiate arguments and the role of public consultation within the overall SEA. The consultant was, understandably, conscious of controlling costs, while the committee (who did not have to worry about cost) sought a more consultative process. For these and other reasons, the SEA process took well over a year, between contracting the consultants and production of the final report. This relative slowness itself fed doubts in the anti-mining movement that the government was committed to any serious regulation of mining (the demand of the movement) and was instead using the SEA as a tactic to delay action. As leaders of the Working Group Against Metallic Mining in El Salvador stated, 'If the government has already said there would be no mining, then why are they doing an SEA? . . . the SEA could open a space for the justification of mining'. Indeed, their reading of the terms of reference for the SEA was that they revealed 'a tendency pointing towards justifying' mining. A programme officer of an international organisation close to the Working Group similarly commented that the SEA was either a trick ('*engaño*') or at best an attempt to avoid lawsuits. These concerns were further aggravated by a relative lack of fluid communication between the minister and movement organisations.<sup>25</sup> Conversely, the Minister kept the Prime Ministers informed of progress and of emerging arguments.

In the end, the report concluded that while mining *could* be viable in El Salvador, the conditions required to make it so were nowhere near in place in the country (TAU, 2011). The report emphasised that El Salvador's water and landscape resources were already extremely degraded and vulnerable. Drawing on the government's national development plan (Gobierno de El Salvador, 2010), the report also noted that El Salvador was socially fragile, in part because of the still recent civil war. In this context, the report concluded that the government would need a range of capacities to plan, monitor, supervise, tax, consult and negotiate in order to make mining viable – hardly any of which were currently in place. Put another way, the report argued that El Salvador would simply be unable to govern for resilience if it were to allow expanded mining investment. The report's authors therefore suggested that the most sensible approach was to put all mining projects on hold until the country had built the capacities it would need to govern mining for resilience. This would require El Salvador to develop technical expertise; implement new legislation and tax and royalty systems; and elaborate land-use planning procedures that could handle mining and create geological, hydrological and other information systems, among other things (TAU, 2011). The SEA's oversight committee submitted a similar argument to the Minister of Environment, though were yet more concerned about the government's regulatory capacity and overall vulnerability of its human and physical environments (Bebbington *et al.*, 2012).

The minister's initial response to these reports was that their findings meant that the country really *should* ban mining. This option was soon dismissed by the prime minister responsible for economy and finance, and was also strongly discouraged by the legal team, given concerns over the implications of such an action for the ICSID proceedings. Instead, they decided to prepare draft legislation for an indefinite suspension of all administrative procedures related to mining projects (in practice an indefinite moratorium) until the capacities to govern for resilience had been developed. The draft law proposed that a multi-actor committee (government, civil society, church and business) would be the mechanism for determining when such capacities had been achieved.

The drafting and debate of the law within the national assembly took another several months, during which time the FMLN lost its clear majority in the assembly in mid-term elections. Arguably because the government did not sufficiently explain their intent behind the law to the anti-mining movement,<sup>26</sup> the Mesa were not supportive on the grounds that they had not been adequately consulted, the law did not propose a ban and that anything short of a ban could easily be manipulated into a green light for mining.<sup>27</sup> Nor did they necessarily accept the argument that a ban would compromise the case being arbitrated at ICSID, and overall, their deep distrust of both government and national political elites left them unable to support anything other than a ban. It was probably also the case that the movement itself found it hard to move beyond its long-standing frame demanding a ban of mining, and believed that a future, more militant, FMLN government, would pass far more stringent legislation banning mining (which has proven not to be the case under the current government, notwithstanding the presence of former guerrillas in the cabinet and executive office). In the words of one movement leader, the law was 'weak; any future government could change the composition of the committee [charged with guaranteeing the implementation of the law]'.<sup>28</sup> The movement's access to key FMLN members of the Legislative Assembly, and (perhaps) the fact that some movement leaders and members of the assembly shared backgrounds going back to the civil war, contributed to the law becoming stalled in parliamentary committees. Meanwhile, the President's office did not actively push for the law to be passed, further reducing the political space open to the Ministry of Environment to be especially assertive in pushing the law. In the end, the micropolitical foundations of an alliance *within the state* and *between state, legislature and social movements* were never adequately constructed such that the law could have momentum in the Assembly.

While this slow drama unfolded, the case in ICSID continued – a background constraint on political opportunities in El Salvador. The lawyers representing the Government of El Salvador cast an argument that was part detailed legal reasoning against the legitimacy of

Pacific Rim's claims, and part sustainability science, with an argument grounded in notions of resilience and vulnerability. Indeed, a significant part of the lawyers' argument drew on testimonies submitted by two members of the Oversight Committee<sup>29</sup> and paralleled the position elaborated in the SEA that El Salvador was so vulnerable that the decision to suspend mining activities was a technically substantiated one and not an arbitrary political act. In some sense, this position also constituted an effort to govern for resilience, in this instance through the institutions of international investment arbitration.

As the case has moved slowly forward, the damages claimed by Pacific Rim have crept up from an initial \$77 million to just over \$300 million. At the same time, Pacific Rim itself – a relatively small operation – was running out of the money necessary to retain its lawyers. In November 2013, the company was acquired by an Australian mining company, Oceanagold, for just over US\$8 million (Oceanagold, 2013). If ICSID finds in favour of Pacific Rim, the return on Oceanagold's investment will be very high, and it is conceivable that Oceanagold was more interested in acquiring the arbitration case than the mining project itself. Indeed, in an interview at the mine site in Cabañas, the then Pacific Rim geologist commented that he felt the project had become so conflictive that it was going to be difficult for the company to implement even if they did win the arbitration. If this is so, then the only value that Pacific Rim had at the point it was acquired resided in its legal case at ICSID.

Seven years after the then-Minister of Environment Hugo Barrera refused to process EIAs for mining projects, El Salvador still has no new mining law and is awaiting the outcome of what will be a game-changing decision in Washington, DC. Yet in the interim, there has been an immense amount of negotiation, knowledge politics, network building and argument construction (see Horowitz, 2010) to try and build forms of mining governance that can enhance the overall resilience of this at-risk country. That these forms of governance are yet to be realised institutionally reflects the fact that they are subject to the same types of transnational relationships, political settlements and conflicts that underlie the growth of the very mineral economy that they would govern.

## Conclusions and discussion

Significant parts of the island Pacific and of Pacific Latin America share a double exposure to climate change and intensified investment in mining. Governing the drivers and consequences of this exposure presents an immense challenge and involves, *inter alia*, building institutions of participatory land-use planning, mechanisms of FPIC, systems for monitoring and sanctioning the environmental and social impacts of resource extraction, water governance institutions that ensure its availability and quality for a range of uses and mechanisms for increasing transparency in the issuing of licences, and management of taxes and royalties. The draft mining legislation sent by the Ministry of Environment and Natural Resources to the Salvadoran Legislative Assembly identified the need to progress in each of these domains before El Salvador would be in a position to govern mining under conditions of post-conflict and acute climate change risk.

While these challenges look like mining governance pure and simple, they are simultaneously means of governing for resilience and vulnerability reduction. At the same time, they are reformist measures. They do not change the fundamentals of the working of a capitalist economy and in most instances they would not imply blanket bans or moratoria on resource extraction. They would, though, seek to enhance capacities of voice and public sector regulation, and to produce landscapes less vulnerable to disturbance events of high magnitude and potentially increasing frequency.

The Salvadoran experience illustrates the extent to which the space for such reforms is constrained by a combination of the operations of a formal capitalist economy that generates few jobs, the related calculations of national electoral politics, and a national and international legal regime that has been designed to reduce the scope of action for national regulatory authorities. At the same time, it also shows how a particular convergence of social mobilisation, cabinet composition and technical argumentation can push back against some of these constraints. In this sense, the Salvadoran experience has been a case study of the double movement in real time, in which the deepening commoditisation of the country's

subsoil resources has been accompanied by a combination of protest, electoral change and statecraft that, in different ways, has sought to limit some of the consequences of that commoditisation. In no way revolutionary<sup>30</sup> (and this has been the great complaint of social movements – a complaint that may turn out to have unravelled regulatory reforms), this counter-movement was nonetheless real in both its intent and its potential impact on market deepening.

The material discussed here has conceptual and methodological implications for ways of thinking about governing for resilience in the face of double exposure. First, and perhaps most simply, is that discussions of exposure, vulnerability and resilience must not only be socially disaggregated (something we have not done in this paper) but also spatially explicit. In this instance, spatially explicit visualisation of the relationships between mining expansion, agriculture and water resources helps identify areas of particular vulnerability at the same time as making palpable the importance of more participatory land-use planning as a component of building resilience. (Such visualisation can also be especially powerful as a means of communicating risk and its geography.)

Second, the Salvadoran case shows the value (though of course, also the difficulty) of understanding manoeuvres within government, political parties, social movements and companies. This reinforces arguments that have been made elsewhere by political ecologists and students of development studies (Ferguson and Gupta, 2002; Bebbington *et al.*, 2004; Wolford, 2010) – even if such research has focused primarily on development agencies and government and said much less about political parties or companies (see Kemp, 2014). Still, the point remains that it can be analytically risky to treat organisations as relative black boxes while at the same time affording interpretations of actions that emanate from those organisations. In this case, the failure (if that is what it ends up being) of the legislative proposal for an indefinite suspension of mining in El Salvador could easily be labelled a bill that was designed to fail, thus reflecting the proclivities of a government that was too timid and neoliberalised to challenge any sort of private investment. Reading it this way would not only be inaccurate, but more significantly

would have missed potential causal paths between protest, long-term learning within a social democratic party and regulatory change, as well as the extent to which problems of communication between Ministries and social movement organisations may ultimately have undermined the potential for governing for resilience.

Another insight gained from having been able to look within government is that processes of negotiation matter greatly and that there are arguments to be won, lost and brokered. Outcomes of these arguments are not necessarily determined by structural necessity or power relations. In this instance, it mattered more how the Ministries of Environment and Economy constructed an argument. However, building an argument that convinced other parties in government took time, and when it finally became convincing, the FMLN had lost its majority in the Assembly. This, in turn, further complicated the possibility of passing legislation to indefinitely suspend all mining activity in the country. Negotiation thus matters analytically as a manifestation of the science-policy interface, as a communicative exercise conducted under conditions of asymmetry and, importantly, as a process that unfolds over time. As such, the timing of negotiation interacts with other temporalities in ways that are causally important.

Third, the argument here has implications for the different scales at which political ecology is conducted, and the different methods open to political ecologists. In a series of articles dealing with the politics surrounding mining, environmental risk and conservation in New Caledonia, Leah Horowitz has developed an argument for what she refers to as 'an up-close, micropolitical angle within a political ecology framework, in what might be termed "micropolitical ecology"' (Horowitz, 2008: 260; also Horowitz, 2010, 2011). In this spirit, she has sought to understand the indigenous Kanak society and environmental movement organisations from within in order to analyse broader dynamics surrounding mining and natural resource governance (see also Le Meur *et al.*, 2013a,b). Being attuned to these micropolitics, she shows, helps understand why certain knowledge claims surrounding mining and its impacts become more or less credible

among different parts of Kanak society, why sub-groups position themselves differently vis-à-vis mining, and how they come to trust or distrust other actors involved in mining governance. She shows convincingly that this attribution of trust and credibility can then have material implications for the broader development of large-scale mineral projects.

For Horowitz, this project involves analysing these micro-political tensions 'within their broader historical, social and politico-economic context' (Horowitz, 2008: 261): what we might call a combination of micro and macropolitical ecology. This combination can also help understand the experience of the draft law in El Salvador. On the one hand, the process leading to it involved all manner of micropolitical negotiations over knowledge claims, as well as processes of persuasion in which some actors within government tried to convince others in different ministries of the extent to which mining might represent unmanageable levels of risk in contexts of climate change and post-conflict society. On the other hand, these actors did less to persuade social movement organisations – allied to the same political party – that to propose legislation that would ban mining outright would run the risk of losing the claim that Pacific Rim had made against the government. Indeed, this broader global governance of investment haunted micropolitical tensions surrounding mining within El Salvador. That said, this very macro-political ecology was not just a structure determining the contours of micro-political debate. Instead, the arbitration at ICSID was only happening *because of* the conflicts that surrounded Pacific Rim's and other mining projects in the country. Had these conflicts not arisen in the first place, Pacific Rim's project would have gone ahead and there would have been no arbitration proceedings. In this sense, the micro- and macro-political ecologies of the mining question in El Salvador constituted each other.

While some of the most intense mining conflict in El Salvador had existed around the Pacific Rim project, those conflicts were part of broader politics of resource governance in the country in which this project was one of many, and in which the politics of mining existed in relation to politics of large-scale land cover transformation and an increasingly

well-articulated politics of knowledge surrounding climate change risk. There were therefore many dimensions of the ‘macro’ that impinged on discussions of the proposed mining law, the implication being that an analytical framework pursuing the co-constitution of the macro- and micro-political ecological requires methodologies to grasp these broader processes. In this paper, we have referred to just one such approach – namely, large-scale mapping of shifting and overlapping geographies of resource access and rights. Combining such approaches with micro-political explorations of resource governance (in this case, of policy and legislative conflicts; in Horowitz’s case, of conflicts within movements) follows the GIS and political ecology agenda laid out by McCusker and Weiner (2003; see also Weiner and Harris, 2003) and further endorses the claim that political ecologies of the subsoil will often have to be interdisciplinary and team-based exercises (Bebbington and Bury, 2013; Postigo *et al.*, 2013).

## Notes

- 1 The Salvadoran example at the end of the paper is one instance of this. There is a particularly high level of Australian investment in Latin American mining. Latin American investment in the Pacific is on a far smaller scale, though the Brazilian company Vale, for one, has significant investments in New Caledonia (Le Meur *et al.*, 2013a,b).
- 2 The countries were (with rankings in parentheses): in Latin America, Guatemala (ranked 4th), Costa Rica (7), El Salvador (10), Nicaragua (14); Pacific Island states, Vanuatu (1), Tonga (2), the Solomon Islands (6), Fiji (15) and Papua New Guinea (12); and in Southeast Asia, Philippines (3), Cambodia (8), Timor-Leste (9) and Brunei Darussalam (11).
- 3 For instance: Human Development Index (HDI) developed by UNDP, the Climate and Regional Economics of Development Vulnerability Index (VI-CRED) by the Stockholm Environmental Institute, the Climate Change Vulnerability Index (CCVI) by Maplecroft, Global Adaptation Index (GAIN) by the Global Adaptation Initiative, and the Climate Vulnerability Monitor (CVM) by DARA.
- 4 Defined as events depositing a country average of at least 10 cm of rain in 24-h periods and more than 35 cm in 72-hour periods.
- 5 Figure 2 is based on a graphic produced by the Minister of Environment and Natural Resources of the Government of El Salvador.
- 6 Noted by the Minister for Environment, Herman Rosa.
- 7 Though in the end, the period 2010–2014 saw little investment in mining projects.
- 8 Assessing water resources at risk of contamination can be done by mapping streamflow downstream of mine sites and the areas that it serves for human and ecosystem use (Bebbington *et al.*, 2014). This, in turn, can be overlain with areas of potential or agricultural land-use to identify agricultural sites whose water resources are at risk of contamination.
- 9 It is important to note that agriculture, overall, uses much more water than does mining and that agriculture can also be a serious source of water contamination. The point here is not to overlook this fact, but to focus attention on the additional exposure that could result from the introduction of mining into areas where water resources are already used by other economic and social activities.
- 10 The one exception was the river feeding San Salvador where discharge has increased – but this is because the river has been increasing, fed by water drawn from other basins.
- 11 Revenues have also been shown to affect capacities to govern for resilience in other ways. For instance, Arellano-Yanguas (2011, 2012) has shown that in Peru, the transfer of extraction-generated revenues back to the regions in which extraction occurs has often given rise to conflict, as different groups seek access to the resources or suspect local authorities of not managing them honestly. This general proclivity to conflict, oriented as it is to accessing rents, complicates efforts to build other governing capacities.
- 12 Though this may not always be the case. For example, the pro-extraction government of Ecuador has also increased the Ministry of Environment’s budget.
- 13 This section draws heavily on Bebbington’s own direct involvement in some of the processes discussed here, in particular: discussions within El Salvador’s Ministry of Environment regarding strategies for environmental governance under conditions of climate change; the implementation of a Strategic Environmental Assessment of the mining sector; and the background work for the preparation of draft legislation regarding the regulation of mining. In this work, he collaborated directly with the 2009–2014 FMLN government, above all with the Ministry of Environment – this collaboration has continued with the new FMLN government elected in 2014.
- 14 No protected area in the country is larger than 10 000 hectares, and 81% of these are smaller than 500 hectares.
- 15 It is not at all clear that the deaths of mining activists were because of the mining projects, though they were often interpreted as such.
- 16 In Spanish: ‘No vamos a salir a apoyar a Pacific Rim’. Interview with Bebbington in San Salvador, July 2010.
- 17 Job creation was still an urgent concern at the end of the government. A senior member of the team preparing the FMLN’s agenda for the 2014 elections commented that: ‘Employment is the principal demand, in all the surveys’. He noted, furthermore, that the business sector had taken advantage of this, linking job creation to investment and environmental regulation as an obstacle to investment and their job creation.



- 18 Technically these positions are referred to as ‘Secretaries’: the technical secretary, responsible for overseeing finance and economic strategy; and the political affairs secretary, responsible for state–society relations and securing the political viability of the government.
- 19 Herman Rosa Chávez, Minister of Environment; Hector Dada Hirezi, Minister of Economy.
- 20 One of the Ministers referred to the Central America Free Trade Agreement with the United States as an ‘absolute defense of all companies registered in the US’. ICSID is the venue at which CAFTA disputes are arbitrated.
- 21 The Ministerio de Ambiente y Recursos Naturales.
- 22 Interview in 2010. Four years later, a senior member of the team preparing the FMLN’s electoral platform for 2014 said that ‘gestión de riesgos’ and disaster responsiveness had indeed been one of the Ministry’s great achievements.
- 23 The Spanish is: ‘Reconstruir el tejido social y productivo dañado por fenómenos naturales y desplegar en todo el territorio nacional el sistema de protección civil y un efectivo sistema de alerta temprana y de prevención y de manejo de riesgos’.
- 24 Bebbington chaired this committee: other members were the late, great ecologist Robert Goodland, geochemist Ann Maest and geologist Allan Astorga.
- 25 It is worth noting that the Minister and representatives of the Mesa did not see this the same way. In some sense, though, these different interpretations are themselves indicative of the difficulty which these actors had in communicating with each other in ways that were fluid and frank. The Vice-Minister did maintain more fluid lines of communication, reflecting in part her own political background and earlier work in the Fundación Heinrich Boll, the foundation of the German Green Party that is closely linked to the more radical environmental movement in El Salvador. This Vice-Minister is now Minister of Environment under the second FMLN government.
- 26 For some, this was a more general limitation. A senior member of the team preparing the 2014 electoral platform of the FMLN felt that the Ministry had been too technocratically concerned with policy design, and not politically astute enough. Speaking of the Ministry’s agenda in 2014, he commented: ‘now is the time for the ministry to think politically. . . . MARN’s battle is not the law but rather the social legitimacy of what it’s doing’ (‘es el momento que el ministerio piense en lo político. . . . ‘la batalla del MARN no es la ley es la legitimidad social de lo que haces’, interview in San Salvador, July 2013).
- 27 Indeed, the movement then presented its own proposal for a law that would ban mining outright.
- 28 Interview with Bebbington, San Salvador, July 2013.
- 29 These were from Robert Goodland and Anthony Bebbington.
- 30 Indeed, in one interview a very senior member of the Ministry of Environment said that their goal was ‘not to change the model, just to reduce irrationality’ within it (‘no cambiar el modelo, es solo reducir la irracionalidad’: interview, July 2010, San Salvador).

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