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Toward a Reconfiguration of Mining Infrastructure in Mexico: Norms, Resistance and Governance

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This paper offers an analytical framework to identify how communities negatively impacted by mineral extraction and its infrastructure can begin to transition towards an emancipatory approach to overcome their marginalisation, accentuated by the socio-environmental conflicts caused by mining. We argue that through the extractivism- infrastructure nexus, alternative options to overcome these conflicts can be unveiled and unpacked. Through the comparison of two Mexican mining cases, the Sonora River Region, in the northwest of the country, and the Oaxaca Highlands in the southeast, we identify the instances of everyday resistance, struggle and contestation, which are important to assess emancipation. The cases show how non-indigenous communities, inspired by indigenous groups, can begin to think differently and find glimpses towards a transition that is more socio-environmentally just. Building on interlegal and municipalism debates, we argue that this transition can be accomplished through a focus on narratives, practices and norms encompassed by four analytical factors: normative frameworks, legacies of social movements, local governance and alternative economies. Our argument offers an alternative to interrogate the function infrastructural projects have in municipal policy-making.

Keywords: mining infrastructure, everyday life, emancipation, municipalism

Resumen

Este artículo ofrece un marco analítico que identifica cómo comunidades impactadas negativamente por el extractivismo de minerales y de sus infraestructuras pueden comenzar una transición emancipatoria para superar su marginalización, la cual es acentuada por conflictos socio-ambientales causados por la minería. Argumentamos que a través del nexo entre extractivismo e infraestructura, alternativas a estos conflictos pueden ser reveladas y explicadas mejor. A través de la comparación de dos casos mineros en México -la región del Río Sonora en

el noroeste del país y la región de la Montaña en Oaxaca, en el sureste- identificamos las instancias de resistencia, lucha y contestación diaria, las cuales son importantes para evaluar emancipación. Los casos muestran como comunidades no-indígenas, inspirados por grupos indígenas, pueden pensar diferente al encontrar atisbos hacia una transición que es más socio-ambientalmente justa. Con base en debates sobre interlegalidad y municipalismo, argüimos que esta transición puede ser alcanzada a través del énfasis en narrativas, prácticas y normas que están englobadas por cuatro factores analíticos: marcos normativos, legados de movimientos sociales, gobernanza local y economías alternativas. Nuestro argumento ofrece un marco que ayuda a interrogar la función que los proyectos de infraestructura tienen sobre la hechura de políticas públicas a nivel municipal.

Palabras Clave: infraestructura minera, vida diaria, emancipación, municipalización

Introduction

This paper offers a theoretical and analytical framework to identify how communities negatively impacted by mineral extraction and its infrastructure can begin to transition towards an emancipatory approach to overcome their marginalisation, which has been accentuated by the socio-environmental conflicts caused by mining. We coin this transition “reconfiguration of mining infrastructure.” The nexus between extractivism and infrastructure is important, because when infrastructure is considered less than an object and more as a socio-relational space, alternative options to the conflicts caused by extractive infrastructure can be unveiled and unpacked. In comparing two Mexican cases affected by mining infrastructure, the article proposes a framework that complements the quantification and classification of socio-environmental conflicts by emphasising the quality of their socio-political angle.

In Latin America, alternative approaches to conflict have been found through the repertoires of resistance of indigenous and Afro-descendent populations that pursue principles of autonomy, communality and counter top-down planning policies. But as discussed in this paper, through organisational and social networks non-indigenous groups can also begin to think differently and find glimpses towards a transition that is more socio-environmentally just. We argue that this transition can be accomplished through a focus on narratives, practices and norms

encompassed by four analytical factors: normative frameworks, legacies of social movements, local governance and alternative economies. By borrowing from new municipalism and interlegality debates, which invite reflection to transform and democratise local state institutions, these factors help to operationalise the proposed framework. The framework offers a tool to interrogate the function infrastructural projects have in policy-making; it unveils some ideas to build emancipatory politics against predatory extractive frontiers.

Infrastructure and extractivism

Infrastructure (cables, pipelines, roads, etc.) is associated with the promise of progress, and with the accelerated improvement of life and connectivity (Anand et al., 2018; Graham & Marvin, 2001). For decades, development agencies have considered infrastructure key to international development and the integration of infrastructural systems as a metric of national competitiveness (Cowen, 2019). In recent years, “infrastructure is experiencing a global renaissance, fueled largely by the interests of finance capital, smart city technological companies, and logistics and *extractive* industries” (Cowen 2019:481, our emphasis).

Like infrastructure, mining and hydrocarbon sectors are considered engines of economic growth, with close links to development. This rationale often classified as “indispensable extractivism” has encountered a lot of criticism given the socio-environmental costs and conflicts generated by extraction (Gudynas, 2011) as well as the mixed results from extractive redistributive policies (Arellano-Yanguas, 2019; Tretteault, 2020). As a response, debates have aimed to find alternatives that seek to transit from a predatory extractivism to more sustainable types, including the impact of its infrastructure upon nature and landscape (Gudynas, 2011). This

transition requires new conceptual horizons to which our paper aims to offer by bringing into dialogue interdisciplinary debates on resource governance and public policy.

We argue that infrastructure cannot be disassociated from extraction. There is value in studying both phenomena simultaneously, especially when infrastructure is not only considered as an object of study, but as a method of inquiry (Cowen, 2019: 483). In this sense, infrastructure has been unpacked as a relational social form that encompasses a series of layers that go beyond the physicality of infrastructure, for example, the political, cultural and moral (Anand et al., 2018; Larkin, 2013; Wiig, et al., 2021). Therefore, infrastructure is an ongoing “process of becoming” that needs to centre on the socio-material relationships it generates upon a population’s everyday life (Schwenchel, 2018). These socio-materialities underline the conflict and tension that infrastructure generates. The colonial extractive legacies these conflicts embed have centred on the exploitation and discrimination of racialised populations; but increasingly they are affecting other type of populations impacted by predatory global capitalism, in particular, through “dispossession-by-accumulation” strategies that reach both rural and urban settings, such as land grabbing for large-scale infrastructural development (Bebbington et al., 2020). As Cowen argues (2019:483), when infrastructure is used as a method then the struggles against infrastructure become visible and “offer a glimpse at how infrastructure can be built otherwise [different to the purposes of global capitalism] so that reproduction can be redirected to underpin alternative intimacies based on alliance, mutuality and solidarity.”

Cowen’s argument overlaps with debates against extractivism which propose a transition towards alternative forms of development (Gudynas, 2011; Escobar, 2020). The latter encompass the implementation of resource governance mechanisms (environmental impact assessments, the regulation and following of prior consultations) as well as everyday practice and policy-making

that shift away from environmental conservation and commodification and move towards another type of market that puts emphasis on social and solidarity economies.

Political ecology debates in particular underline how the biopolitical work of infrastructure (the making and disciplining of citizens) cannot be disassociated from the governance of nature and daily life (Heynen et al., 2006; Anthias, 2018; von Schnitzler, 2018). The infrastructure of extractive economies, in their transformation and destruction of nature, occupy territories which in Latin America are commonly considered spaces that ensure the survival of populations (in most cases exploited and marginalised by capitalism for centuries) and, when studying indigenous populations, of their culture living in harmony with nature.

The resistance to recover and defend these territories rely on concepts of autonomy and communality encompassed by *Buen Vivir*, which are delinked from the aims of progress and growth upon which the ideal of infrastructure (extractive or not) was built (Gudynas, 2016; Escobar, 2020). Instead, *Buen Vivir* offers commitments on quality of life, not only material but also spiritual. Communities are defined in an expanded sense, which includes some non-human elements or even the whole environment. These ontological struggles make sense when, as Escobar (2020:73) argues, the occupation of territories by capital and state involves, “economic, technological, cultural, ecological and often armed aspects” that when juxtaposed with infrastructure break with the promise of progress (Anand et al., 2018).

In Mexico, indigenous movements adhere to notions of *Buen Vivir* through, for example, discourse and practices of *Comunitariedad* in Oaxaca under the lead of indigenous intellectuals, or *Buen Gobierno* in Chiapas put forward by the Zapatista leadership. Alongside practices of resource governance, a myriad of resistance practices are found. For example, protests and everyday activities such as, “sowing with health crops, opening alternative schools, safeguarding

the forests, defending the water, liberating airwaves and the internet” (Escobar, 2020:63). These practices when reflected in the governance of these territories, through principles of autonomy and communality, counter top-down imposed planning policies that have gone hand in hand with extractive infrastructure (i.e. export zones and districts, industrial corridors, logistics, transport), alongside the financial and service (i.e. tourism) infrastructure that extractivism requires (Arboleda, 2020). With counter-planning comes the autonomous design of objects, services, institutions and cities (Escobar, 2020:139; Sanchez-Vazquez & Leifsen, 2019). And through transnational advocacy networks (Keck & Sikkink, 1999), these counter-narratives begin to reach or have spill-over effects upon highly urbanised and non-indigenous populations.

The paper combines these debates on indigenous anti-extractive movements with debates on "new municipalism" to enable a comparison of indigenous and non-indigenous protest politics. The new municipalist literature has focused on the local politics of everyday life, while developing municipal empowerment along progressive lines of thought. Although these debates have been applied to different global geographies, the most prominent academic debates have centred on European and North American urban contexts (Ibarra Güell et al., 2019; Pinto et al., 2022; Russell, 2019; Thompson, 2020). The new municipalist trajectory emphasises hybrid models of municipalism that bring different combinations of city government-social movements action around waste and water management, social re(production), urban regeneration or municipal indebtedness. Alternative solutions to these problems have offered evidence on different experiments of participatory urban democracy in which civic participation and political conflict co-exist with the creativity to reform municipal (state) institutions.

The overlaps between new municipalism and Latin American autonomous social movements are striking especially with regards to the strategies followed to build anti-

establishment responses, originally promoted by indigenous (rural) mobilisations of the 1990s, but which slowly have filtrated movements in the urban popular sectors at the start of the new millennium (Dinerstein, 2015; Zibechi, 2018). Another overlapping point is the gain of territorial control of resources to transform and democratise local institutions by building both synergies and conflictual relationships with the state and expand global horizontal networks to push forward social movements' agendas (Russell, 2019; Thompson, 2020). Like studies on Latin American movements, new municipalism underlines the importance of the “commons” as a result of communities' marginalisation, displacement and expulsion from and by the financialisation of capital (Bianchi, 2022). These overlaps are highly related to the realities of communities exposed to the impacts of infrastructure and extractivism, however, the dialogue between all of them has been unexplored; in this paper we set out a way forward through four factors which unveil the enabling fields to resist the negative impacts of mining and its infrastructure. Debates on new municipalism inspired us to identify three of the four factors in our argument (social movements, governance and alternative economies). The fourth factor, normative frameworks, is informed by debates about the interlinkage, coexistence and divergence of diverse normative frameworks and their impacts upon state and non-state actors (Murray, 1988; Santos, 1987), which are key to assess the level of community transition and the extent to which a community is able to transform local state institutions. While indicating the link between infrastructure and municipalism, our theoretical and analytical framework also draws upon debates on resource governance regarding institutional capacity, coalition building (Gustafsson & Scurrah, 2020) and extrajudicial arrangements (Sanchez-Vazquez & Leifsen, 2019), which have been useful to criticise the state's neglect, corruption, and administrative violence in the implementation and regulation of extractive policies.

The paper's argument develops through the comparison of two Mexican mining cases, the Sonora River Region, in the northwest of the country, and the Oaxaca Highlands in the southeast. It identifies and analyses points of overlap and divergence, as well as potential future strategies for emancipation through everyday resistance, struggle and contestation. Furthermore, the comparison's complements recent discussions (Martinez-Alier et al., 2022) on the quantification and classification of socio-environmental conflicts by emphasising the quality of the socio-political angle that conflicts encompass. The comparison shows glimpses or potential opportunities that can enable the attainment of more just outcomes within environmental conflicts. In the next section the paper presents a methodological rationale which includes a background of the two cases. The following sections develop each of the four factors, while using empirical data to exemplify the discussion. The paper concludes with a discussion that articulates these four factors and its relationship with extractive infrastructure.

Methodology and case study selection

Since 2000, the mining frontier has been expanding in Mexico. For example between 2000 and 2016, the amount of gold extracted doubled that extracted between 1521 and 1830 (Sariego, 2016:27) and according to the *Atlas of Economic Complexity*, the current gross of mineral exports has increased from US\$ 17.4 billion dollars in 2000 to US\$ 31.6 billion dollars in 2018.

¹ In 2013, energy reforms intensified natural-resource extraction in the country; these complemented earlier reforms to mining regulation that streamlined the issuing of mining concessions and spurred the number of 50-year contracts with transnational corporations. Based on the *Conversing with Goliath* newspaper database (Zaremborg, et al., 2019), running from

2006 to 2019, of all different extractive industries in Mexico, mining is the sector which has encountered the larger number of conflicts reported. This is unsurprising given the longevity of the sector, but what is more informative is the type of conflict reported: out of 448 mining reported facts, the highest percentage represent conflicts on environmental (35 percent) and territorial (16 percent) issues. The distribution of these conflicts is found throughout the country regardless of the historical mining legacies existing in the northern part of the country.

The two regions studied in this paper were indicated in the database as cases having a high incidence of conflictive reporting. Both regions are very different in socio-economic, cultural and geological terms, but two particular aspects drew our attention to build the comparison: first that the Sonora River Region is seat of the biggest copper mine in the country, whereas the Oaxaca Highlands has a recent history in opposing gold mining; and second that the communities in the northern case are non-indigenous which contrasts to the southern case inhabited by Zapotec communities. Despite these differences, communities in both regions have experienced exclusion, which can be materialised through “expropriation, displacement, invisibilisation, expulsion,” and for the case of indigenous communities, “the constant classification and translation of autonomy” into tools for democratisation (Dinerstein, 2014:220).

As discussed in the next sections, the Oaxacan experience because of its indigenous mobilisation background has found tactics and strategies of survival that challenge the liberal and pro-extractive state through normative frameworks, governance arrangements and daily organising, that in line with Dinerstein’s (2014) argument, have helped to implement the “art of organising hope”. The organisation of hope consists of four moments: negation, contradiction, creativity and excess; which we interpret as the rejection to carry on experiencing exclusion and the creativity to find ways to navigate (albeit contradictorily) institutions and processes through

in and against the state in order to generate alternative options (excess) to overcome exclusion. This organising can be inspirational for non-indigenous communities (i.e. Sonoran River Region), therefore helpful in reconfiguring the meaning of mining infrastructure and its potentiality for emancipation. For this organising to be inspirational, Dinerstein argues, “one has to account for the existence of different forms of oppression and resistance which...mobilise hope against the self-expanding force of capital”; she continues, “[a]ccumulation by dispossession is creating common grounds for new forms of struggles that are beginning to find the unity in the diverse” (2014: 220).

As mentioned above, it has been the communities’ common experience of exploitation, neglect and displacement which led our comparison. As two non-indigenous scholars from the global south (Torres-Wong is Peruvian and Guarneros-Meza is Mexican but based in UK), we were interested to study how non-indigenous groups could learn from indigenous communities in their struggle against mining exploitation. In our analysis, we were careful in not stigmatising, romanticising or re-victimising local communities; the latter was minimised by contrasting norms, practices and narratives that allowed agency for social transformation.

Case description and methods

The Sonora highlands are comprised of eight municipalities which are part of the Sonora River Region.² Mineral extraction has been present since the late 19th century in the municipality of Cananea, hometown of the biggest copper mine in Mexico and the fourth biggest in the world (Milano, 2018). The mine, named Buenavista del Cobre (BdC), is controlled by the Grupo México Corporation and is famous for generating employment, but also for provoking socio-environmental impacts to local communities inhabiting the region.

Grupo México bought BdC in 1989 when the Mexican government undertook the privatisation of many state-owned companies as part of the country's structural adjustment policies. Changes in labour conditions and the removal of many benefits held by the Branch 65 of the union of mining workers, *Sindicato Nacional de Trabajadores Mineros, Metalúrgicos, Siderúrgicos y Similares de la República Mexicana* (SNTMMSSRM), together with poor safety and health working conditions, provoked a major strike in 2007. In 2018, nearly 650 workers (Soy Cobre, 2018) and their families were still affected by the strike as they could not be redeployed in the regional mining sector. The lack of formal and well-paid jobs has jeopardised these families' access to home ownership, public health provision, access to potable water and household waste collection. The union-based mobilisation remained isolated from other social sectors also impacted by the mine. This changed in August 2014 when 40 million litres of acidulant copper were leaked from a pipeline connected to the mine's tailing dam and polluted two thirds of the 400 km-long Sonora River. Peasant communities impacted by this ecological disaster rose their voice against the company demanding compensation for the damages caused to their health and natural environment. For the first time in decades, locals demanded from Grupo México to be consulted about the company's decisions regarding mining infrastructure development that could impact their life and security.

The state of Oaxaca is comprised of 570 municipalities, most inhabited by indigenous populations. In the mid-1990s, the system of *usos y costumbres* was legally approved enabling indigenous municipalities to elect their political authorities using customary laws. This legal innovation underlined the prospect of autonomy, self-determination and recognition of difference and diversity widely promoted by the International Labour Organization (ILO) through the approval of the Indigenous and Tribal People Convention in 1989. Capulalpam de Mendez

(hereafter Capulalpam), is the main municipality our fieldwork focused on, alongside its neighbour Natividad.

The conflict between the indigenous municipality of Capulalpam and the Canadian mining company Continuum Resources has been framed by the community as an attack against indigenous autonomy. Continuum Resources began exploration operations in 2006 and had plans to begin a gold open cast mine in the mountains of Capulalpam, which raised an alert among community members about contamination of water aquifers. Capulalpam through a long-standing advocacy network formed by neighbouring communities, progressive wing of the state, academics and environmental and human rights NGOs has been able to hinder the renaissance of gold mining in the area. The success of anti-mining mobilisation has, on the one hand, been possible by the development of social infrastructure that enabled alternative economies such as forestry, handcrafts and eco-friendly tourism (Guarneros-Meza & Torres-Wong, 2022). On the other hand, Capulalpam has been able to silence pro-mining sectors from the neighbouring municipality of Natividad, famous for being a historical mining centre (Torres-Wong & Jiménez, 2021).

Capulalpam and Natividad have a shared history of gold mining. Unlike Capulalpam, community members in Natividad do not ascribe to an indigenous ethnicity and still depend on mineral extraction for employment. There is a mine still operating in Natividad and is currently owned by a small Mexican firm, Minera Natividad y Anexas. However, mineral production declined substantially by the mid-1960s, alongside economic wealth and the urban infrastructure and roads required by mining. In contrast to Capulalpam, Natividad has been supportive of the reactivation of the mine by Canadian investors; as a result, it has suffered different types of reprisals by Capulalpam authorities.

Fieldwork in Sonora was carried out in Hermosillo, Cananea and three other municipalities along the Sonora river: Arizpe, Banámichi and Ures in August 2018. We conducted 39 in-depth interviews with state-level and municipal officials, mining employees, trade unions, local journalists and community members. In Oaxaca, fieldwork was carried out in the municipalities of Capulalpam, Natividad and Oaxaca City during the period of July 2017 and August 2018. Data collection included informal conversations, newspaper review and 31 semi-structured interviews with local leaders, state-level and municipal officials, mining employees and academics. Interviews aimed to understand how spaces of citizen participation developed under mining policy and the relationships that communities, corporations and state agencies built around mining infrastructure. Through approaching infrastructure as a relational social form (Anand et al., 2018; Cowen, 2019; Wiig et al., 2022), an open coding was followed that helped to unpack socio-territorial struggles against the effects of mining infrastructure on everyday lives, local governing arrangements and power relations in the implementation of mining policy. These themes helped us to define the four factors presented in the following sections.

Factor One: Overlapping normative frameworks

Larkin (2013:329) argues that infrastructures, “are objects that create grounds on which other objects operate, and when they do so they operate as systems,” in this sense we argue that normative frameworks are one of the different elements which form part of the layered system of infrastructure. A normative framework contains the rules (legal or not) that structure social interaction by constraining or enabling actors’ behaviour (Lowndes & Roberts, 2013) with regard to a particular infrastructure. We find Merry’s (1988) “legal pluralism” useful because it not only highlights the coexistence of two or more legal systems in the same social field (p.870),

it also expands understandings of what normative frameworks are beyond the classical association with state law and regulation. Her approach helps to shift legality away from legal centralism rooted in the state and turns to other forms of ordering. Also through this approach, legality is anchored to historical contexts that examine the ways social groups conceive ordering while acknowledging domination through law as well as individuals' capacity to resist that law.

Hence, legal pluralism allows the coexistence of state law with customary law, which became widely acknowledged in the 1990s through neoliberal multiculturalism that multilateral organisations and nation-states began to adopt across Latin America. On the one hand, neoliberal multiculturalism generated an arena of contradictions where human and cultural (indigenous) rights and neoliberal economic reforms began to work together without questioning legacies of colonial racism and domination (Duran Matute, 2020). On the other hand, it is acknowledged that despite legacies of colonialism (Dehouve, 2000; Anthias, 2018), indigenous communities have learned to identify the contradictions different legal systems generate, make them play to their advantage and build a more secure environment against colonial practices, while dignifying their indigeneity by putting forward political projects that challenge power relations (Duran Matute, 2020).

Although we argue legal pluralism is important to acknowledge in the reconfiguration of mining infrastructure, debates on “interlegality” developed by Santos (1987) are also important to bear in mind. In contrast to legal pluralism, interlegality recognises not only the coexistence of legal systems, but also the porosity among them as these systems overlap and interweave by everyday practice and interpretation (see Factor Three). The porosity of interlegality causes transitions and transgressions that impact the daily juridical experiences and understandings of

individuals and social groups. This space of interpretation enables the emancipatory character of interlegality (Santos, 1987), which the pluralism of Merry recognises but does not enact.³

The overlap of legal frameworks in the terms defined by Santos was observed in the Oaxacan case. The approval of *usos y costumbres* in Oaxaca State in the 1990s was depicted by some scholars and activists as a political conquest for indigenous peoples as they were able to gain recognition of indigenous laws by the state (Canedo Vásquez 2008). Resulting from this recognition Capulalpam is ruled by a hybrid political system that combines three types of authorities operating under three different legal frameworks: state municipal authorities, the agrarian authorities and indigenous authorities. The first type is comprised by a mayor and councillors and is part of the state political/administrative law. Agrarian authorities are ruled by the Agrarian Law resulting from the Mexican Revolution, which redistributed land to peasants and indigenous peoples to be collectively stewarded by the agrarian assemblies. Indigenous authorities in the form of the Council of the Elderly (*Consejo de Caracterizados*) are part of indigenous political tradition and are ruled by customary laws. By virtue of the *usos y costumbres* system, these three types of authorities are elected through Communitarian Assemblies (*Asambleas Comunales*).

The hybridisation of local authorities allowed the community in 2006 to expel Continuum Resources and curtail its explorative and infrastructural plans in the territory. This achievement, over the subsequent years, has been followed by a series of legal tactics. It has weakened gold mining activity through environmental lawsuits against the remaining company Minera Natividad y Anexas, which has shown a lack of compliance with environmental regulation, especially with regards to toxic waste management. As a result, in 2017 the Federal Attorney for

Environment Protection (PROFEPA) closed down the mine while the lawsuit was being resolved.

Debates on interlegality also recognise paralegal frameworks that go beyond the formal written rules by the state and that hybridise with alegal and illegal systems set by non-state actors. According to Santos and Rodríguez-Garavito (2005) corporate social responsibility (CSR) policies can be found in this interface and the Sonoran case illustrated this aspect of interlegality. CSR policies are voluntary norms that corporations use to self-govern themselves in their relationship with neighbouring communities, while aiming to avoid -subject to the legal limited landscape- state regulations that may curtail business growth or development plans (Shamir, 2005).

In the extractive sector, CSR has played a form of soft-regulation that has slowly aimed to replace state regulation in the development of particular localities (Rodríguez-Garavito et al., 2017). Zarembek et al. (2018) argue how soft regulation coexists in the Mexican legal context of the extractive sector. In our fieldwork in Sonora, CSR showed to be a predominant norm that helped legitimate the absence of the mining corporation in the management of the remediation plan set after the spill. However, CSR had to coexist with certain aspects of the environmental regulation that could not avoid, for example, the sanction set by PROFEPA to the corporation of MX\$2 million pesos. The remediation plan was managed by a private Trust, *Fideicomiso Rio Sonora* (FRS), established with the corporation's monetary sanction, but publicly managed by the Secretariat of Environment and Natural Resources (SEMARNAT) and implemented by state and municipal level governments. The way the FRS was managed gave the corporation the upper hand as it helped it to avoid any political and administrative responsibility from the toxic spill, while allowing CSR to unfold as a way to legitimate the corporation's image. Legitimation has

been built through community and educational training programmes that equip people with leadership skills and organisational tools for coping with unemployment and self-provision caused, ironically, by the corporation's environmental negligence and the infrastructural expansion of the mine (Madrigal González & Guarneros-Meza, 2022).

The two cases show how both *usos y costumbres* and CSR have become interlegal spaces of dispute through the interpretation actors give to them in the hybridisation of these coexisting norms that go beyond state law. If a difference is to be set between customary law and CSR is that the former has interwoven formally (in written format) with state law (i.e. Article 1 of the Mexican Constitution or Law of Rights of Indigenous Communities and Peoples of Oaxaca State). In contrast, CSR exists outside state institutions, but it is present in the commitments corporations set in their own self-governance across the mining sector and which infiltrates the public and private realms (i.e. the principles set by the International Council on Mining and Metals, awards given to mining firms by the Mexican Centre for Philanthropy (CEMEFI) and Grupo México's own CSR policies encompassed by its Code of Ethics and Human Rights Policy).

Factor Two: Legacies of social movements

For Santos, emancipation is generated from the bottom-up collective practices of the oppressed, who build linkages between law and politics. For example, their repertoires of action that combine litigation on the one hand, and protests, boycotts or acts of civil disobedience, on the other, to defend rights-centred approaches to the commons, land or traditional knowledge (Santos & Rodríguez-Garavito, 2005).

In the Oaxacan case, the linkages between law and politics were observed through Capulalpam's technical and financial resources to fight Natividad Municipality in the Agrarian Tribunal for the ownership of the land where the main entrance to the old gold mine is located. The later tactics helped to ensure that exploration and extraction could cease. This legal tactic was accompanied by small acts of disobedience that interviewees shared during fieldwork. For example, the blockade of the highway connecting Oaxaca City with the Sierra de Juarez and the kidnapping of lorries loaded with mineral extracted in a clandestine way from the closed mine.

Beyond the links between law and politics that collective struggle can make, we argue that a history of collective mobilisation is also required to reconfigure the meaning of mining infrastructure. The latter is important to ensure that these collective practices count with the know-how to organise and create alternative projects (Dinerstein, 2014; Zibechi, 2018) that challenge the state and mining corporation's interests. Conway and Singh (2011) offer a synthesised discussion on the history of collective action in Oaxaca: Zapatismo in the 1990s and the repressive confrontation of the state against the Popular Assembly of the Peoples of Oaxaca (APPO) in 2006, have been two recent legacies that have informed the collective organising in Capulalpam. Both movements have underlined the politicisation of everyday life through the reclamation of land, ecology and community self-reliance and self-governance that are rooted in ancestral practices and that over time have been recuperated by indigenous communities with political imagination. Decades later, these claims have been inherited by the anti-mining network in Oaxaca State, which holds national links with *Red de Afectados por la Minería* and international links with influential and highly skilled civil society organizations like Oxfam and the Due Process of Law Foundation.

Opposition to mining has also developed through the memory of poor labour conditions that interviewees in Capulalpam remembered through the experiences of their ancestors when they worked in the Natividad Mine back in the 1960s. This memory is accompanied by the community's fight in the 1980s against the paper company, *Papelera Tuxtepec*, which was indiscriminately logging their forests. These memories helped to create a collective consciousness about the defence of the common good (Méndez 2017) that was later mobilised by local leaders who associated open cast mining with contamination of the local river and aquifers.

The history of social movements in the Sonoran case is centred on mining labour unionism since early-1900s, but as a result of the toxic spill in 2014 a new style of activism emerged. The 2007 strike of SNTMMSSRM has been iconic in underlining the labour struggle against the modernisation of the mining industry in Mexico (Sariego, 2013), which accelerated as a result of the privatisation of mining and the precarisation of labour working conditions in the 1990s. Over the last fifteen years, the labour movement has combined protests, strikes, litigation and lobbying with politicians and international trade union networks. The labour movement does not challenge mining infrastructure, but it does challenge the working conditions which have deteriorated.

The labour movement in Sonora has been confined to the municipality of Cananea and although attempts to build alliances with environmental movements as a result of the spill emerged, they were short lived. The spill's environmental, health and social effects generated a new type of activism along the seven municipalities located in the basin of the Sonora River. This activism was a combination of anger and a sense of social injustice that communities felt against the corporation and the state authorities resulting from the slow and unaccountable process at dealing with the disaster and its remediation (Lamberti, 2018). This conjuncture

allowed Project on Organizing, Development, Education and Research (PODER), an international NGO aiming to improve corporate transparency and responsibility through a human rights perspective, to organise citizen groups along the region called *Comités de Cuenca Río Sonora* (CCRS). The CCRS have been creating a sub-regional front that has gradually excluded Cananea and its historical labour movement. CCRS-PODER have followed a socio-legal strategy against state authorities and the corporation. PODER's aim to promote human rights and its work with indigenous communities in Puebla, central Mexico and Peru against mining projects, indicate how the organisation has been inspired by the socio-legal action that many indigenous groups have followed to challenge capital investment projects in their territories.

As reported in (Guarneros-Meza, 2022), PODER has worked closely with the affected communities to raise 15 constitutional injunctions (*amparos*); some have reached the National Supreme Court of Justice against a wide range of government authorities (from environmental, health, agrarian ministries and respective regulators to municipal councils) and the corporation. In two occasions the court ruling has favoured the communities; the first in 2015 which recognised that water wells were contaminated and the corporation had to provide water-plant treatments as part of its remedial plan, and the second published in 2018, establishing that all business corporations with a direct impact on the environment have to consult local communities, indigenous or not, about their infrastructure plans (Ibarra Barrera, 2021:238). Despite the slow process that litigation entails, the CCRS are not keen to widen their repertoires of resistance, as one resident told us “we dislike the union's protests because they turn violent, but we are keen to challenge the corporation through legal means” (fieldwork notes). Although the latter may be a limitation, there is no doubt that the CCRS are expanding their scope through PODER's national and international networks, which has been helpful for communities to

emancipate against mining infrastructure through the linkage between law (and its interpretation) and the politics of land, water and territory.

Factor Three: Local governance (and government)

Article 115 of the Mexican Constitution underlines that municipal government is the third tier of government in the country, following the state-level and federal tiers. Municipal government's main responsibility is provision of public services; albeit attempts to decentralise fiscal responsibilities, most municipalities have depended comfortably on federal distribution of resources through earmarked grants and transfers (Cabrero, 2013). It can be said that Mexican municipal government is weak, because it neither has enough fiscal resources nor the autonomy to decide how to invest those resources. In the Sonora River Region, municipalities have shown limited resources to respond to citizens' needs and demands. Against this backdrop, Cananea Municipality has struggled to build capacity to absorb responsibilities that, ironically, were once those of the mine when it was a state-owned enterprise (Sariego, 2013). Hence, Cananea Municipality has relied directly on partnership arrangements with Grupo México, especially with regards to water provision and urban infrastructure maintenance. Similarly, any social or assistential projects have been complemented with the policies rolled out by the CSR division of Grupo México. In this sense, two important actors of local governance in Cananea and, since the 2014 spill in the other seven municipalities, have been municipal authorities and Grupo México.

During fieldwork, we witnessed the first time Cananea Municipality benefited from the mining tax (colloquially known as *Fondo Minero*) as state-government and municipal authorities began planning the tax distribution and expenditure under a close monitored system overlooked

by federal authorities. During the second year of the 2015-2018 administration, 40 percent of Cananea's *Fondo Minero* budget was allocated to participatory budgeting which promoted more transparency and citizen participation in the allocation of resources. Of the 13 projects citizens voted for, basic infrastructure was prioritised such as roads, water and sewerage pipelines and street electrification. These works more than doubled the investment that the previous two administrations together carried out. It was the first time citizens experienced having a voice in policymaking and participation was intense for almost twelve months with several meetings a week to understand needs, decide priorities and oversee implementation. It was in the everyday participation that citizens were immersed continuously in the importance of everyday infrastructure. However, participation would not have been possible without the tax collected from mining and the roads and urban infrastructure it requires. With regards to the other municipalities along the river, Grupo México began to intervene in their governance through consultative support for the municipalities' development plans, which by law have to be created at the start of each administrative term, and invariably include urban infrastructure.

Although Oaxacan municipalities experience the same institutional weakness described above, the coexistence of normative frameworks (Factor One) has developed governance arrangements that provide opportunities for local authorities to acquire more political power than the Sonoran counterpart. Resource-wise, Oaxacan municipalities have been historically disadvantaged, but not legitimate-wise (Díaz-Cayeros et al., 2014). Capulalpam's local authorities -in particular the president of the agrarian assembly with support of mayor and councillors alongside the social movements' narrative of autonomy, self-governance and dignity- have found ways to legitimise their decisions, not only to residents but also towards other state institutions found at the state-level government (i.e. congresspeople) and federal agencies

favouring indigenous rights (i.e. National Institute of Indigenous Peoples - INPI) and the environment (i.e. SEMARNAT). The close attachment to land and territory that authorities hold in their daily narrative has been key in retaining this power. As illustrated by a Natividad leader alluding to the rivalry with Capulalpam “without land, Natividad does not have anything to govern upon” (member of agrarian committee, August 2018).

Capulalpam’s local conjuncture has built a powerful discourse to gather community support and institutional leverage to fight against mining infrastructure. We observed that after 2006, when Continuum Resources was expelled, two main tactics have held back mining over the last decade. First, the close monitoring of what is happening in the Natividad Mine through inside informants that update local leaders of daily activities; second, a series of administrative and legal claims against Minera Natividad y Anexas and Natividad Municipality presented to PROFEPA and the Agrarian Tribunal, respectively. This is an example on how Capulalpam authorities combine legal frameworks and navigate in and outside state institutions to maintain their power despite the lack of fiscal resources. Capulalpam leaders know when to resort to state institutions, but also when to step back by resorting to their autonomy.

When contrasting the two cases, we observe that the weakness of municipal authorities in the Sonora River Region results from their subordination to mining interests in the governance arrangements that the corporation has managed to infiltrate in everyday governing and living practice: from water-infrastructure advice and support, to community festivals (i.e. food and wine) and participatory budgeting. Unlike Capulalpam authorities, the Sonoran counterpart has not been part of a politico-legal struggle or resistance, hence an untroubled coexistence of norms takes place. This may be a reason why the Sonoran Municipalities do not bring Grupo México’s decisions to account when these affect communities. On the contrary, the corporation and

municipal authorities are always perceived by the public to be working separately when delicate issues are addressed: water contamination and remediation. Guarneros-Meza (2022) argues that Grupo México's distancing from public responsibility has been one of its tactics to minimise social ostracism, while maintaining links to carry on lobbying politicians and government officials across different government agencies.

Although the Oaxacan case lacks the historical mining presence that the Sonoran case experiences and provides a different conjuncture, it shows that for reconfiguring mining infrastructure local authorities must be more active or "hands on". The Oaxacan case shows that local authorities can be a vehicle of change by becoming more responsive to residents' concerns towards mining as long as articulation between leaders and residents is in place. Although Sonoran residents (i.e. CCRS) do not have the same interlegal framework that allow indigenous communities to insert *usos y costumbres* in daily governance arrangements, our fieldwork indicated voids in which they could demand (and scrutinise) municipal authorities to learn more about: a) disaster prevention and its links to regulations across the different stages of production, many of which impact infrastructural plans, b) a clear and open rationale and process to compensate residents after a mining disaster, c) preparedness to provide remediation and repair services and infrastructure based on what higher tiers of government decide, and d) a critical understanding and monitoring of CSR policies to complement the municipal own development plans. Through activities like these, Sonoran communities can navigate municipal state institutions, while challenging municipal authorities in litigation supported by PODER.

The latter suggestions are far from strong self-governance practices developed by the Capulalpam community, but they are first steps to inspire non-indigenous grassroots to combine protest, resistance and negotiation with and against the state. By putting emphasis on the

municipal level, it can also be questioned the institutional centralisation found in central-local government relations, which among other things, prevent municipalities from raising law suits against higher tiers of government and from overcoming negligent infrastructural mining practices.

Factor Four: Alternative economies

The questioning against institutional centrality highlights the importance of governance arrangements in not only service provision, but also in thinking new forms of economic development (Subirats, 2019; Thompson, 2020) that offer alternative extractive economies in a broader sense (Gago & Mezzadra, 2017). In the mining literature, Torres Wong (2019:147) argues that “indigenous economic viability is one crucial way for ensuring conditions for the emergence of anti-extractivist stances among indigenous communities.” But she also acknowledges that this economic viability is linked to local representative institutions with effective management of natural resources for the benefit of the community. Her argument resonates with “research that highlight that communities are empowered through collective control of resources” (2019:146), which may (or not) lead to positive environmental outcomes, but we argue, do help to put forward alternative political projects to mining infrastructure.

Arboleda (2020: 93-94) shows how transnational mining in Latin America and East Asia has contributed to “global depeasantisation” by displacing peasants from their land and territory. In Latin America, peasants gradually have become the appendage of the mining labour force, in charge of manual tasks such as cleaning, catering and security as well as becoming more entrepreneurial through street vending and tourism activities. Depeasantisation in the Sonora

River Region was clearly observed through the damage caused by the 2014 toxic spill. The land of hundreds of peasants involved in subsistence farming and local produce was polluted. In particular, the municipalities towards the south of the river have been known for their dairy and vegetable produce which was halted for at least three years after the spill, partly because of pollution levels, but also because local tourists stopped visiting and demanding the produce in fear of contamination. The remediation plan, orchestrated by the FRS, aimed to ensure a continuous monitoring of the quality of water to ensure contamination levels were back to human consumption levels. However, this monitoring was short lived and communities, local academics and organisations such as PODER questioned the quality of the results (Lamberti, 2018). The corporation was absent from the public process of remediation, but after 2017, when the FRS closed down claiming remediation was achieved, Grupo México began to get involved and take ownership of the Sonora River Special Economic Zone (SRSEZ). A corporation staff member mentioned:

[W]e have a very important building that we built, it was supposed to be a health clinic but it did not turn out that way, there were problems of communication. But that building we thought that for the Sonora River it would be better than [citizen committees – as set in Cananea]. It is not only that, we also want to set a government office gateway so people could solve all type of paperwork, a lorry that transports people up and down to sell their produce; we already have identified a retailer who would buy all their produce. (Mexico City, September 2018)

Through the SRSEZ the federal and local government attempted to foster economic growth in the Sonora region by reactivating local activities like agriculture and livestock that had been severely impacted by mining operations. The measures undertaken under SRSEZ also included the promotion of tourism as a means to create new income sources for many of the towns in the region. Curiously mining was neither mentioned in the law or implementation

programme document. However, the regulation (which translates law clauses into implementation) emphasised that the SRSEZ also promoted mining. The SRSEZ shows how agriculture, gastronomy and tourism were accompanied by the importance of road infrastructure that happened to be beneficial to mining. This shows the legacies of the mining enclave the region has had; mining has hindered at worst and controlled at best the diversification of the regional economy, which increasingly has relied on infrastructure promoting commodification, export markets and foreign direct investment.

While in Sonora tourism, promoted by state-level government, reinforced the value of mining, in Capulalpam tourism has worked as an alternative that has been capable of resisting open cast mining. However this does not mean that an alternative model of development has been achieved. We argue that Capulalpam's stance holds because of the interlegality of its normative framework that allows a hybrid composition of local authorities (municipal, agrarian and indigenous). The opposition to mining has created an alternative infrastructure that is more socially oriented through ecological progressive narratives found in sustainability. Sustainable tourism, relying on circular economies and on the everyday infrastructure behind it (forest trails, cabins, local food produce and handcrafts) has worked to maintain Capulalpam's autonomy and to empower local governance institutions against state and federal government narratives of modernisation and development through mining.

The alternative economic model operating in Capulalpam over more than a decade provides the basis for collective well-being and pro-environment local politics. Since 2007, the municipality has been categorised as *Pueblo Mágico* (federal program that provides resources to municipalities to promote tourism), making tourism an important source of employment for

young people. In this economic scenario mining-based development plans have little room to develop.

According to state officials from the tourist sector, one of the reasons eco-tourism flourished in Capulalpam was because of the strong political organisation and enforcement of customary law (Oaxaca City, August 2018). The reference to customary law underlines the ability of local authorities in navigating in and against state institutions. For example, local authorities accepted funding from the Commission for Indigenous Development (now INPI) but supplemented it with community labour (*tequio*) based on customary law to build infrastructure for tourism. Through state funding from the Secretariat of Tourism, old indigenous architecture was reintroduced, tin roofs were replaced by traditional roof tiles alongside the painting of houses. As a result, local authorities have maintained control of touristic activities and have created four community companies that provide employment to its members. Changing the ownership of means of production has been a “local and gradual” but important step. As Zibechi (2018:30) argues, the ownership of means of production does not resolve all problems, but without it none are resolved.

These examples demonstrate the strategic use that local authorities make of economic resources from the state, but also their decision to retain power to develop their own vision to organise and develop the municipality. In contrast to Natividad and to the Sonoran case, the development of eco-tourism as a new economic model contributed to reinforce anti-mining attitudes in Capulalpam as part of their collective identity. Capulalpam has transformed its traditional economy, but has followed a different type of depeasantisation in which subsistence agricultural activities have been replaced by modern industries (small-scale tourism infrastructure) that, unlike mining, are less aggressive towards the environment.

A framework to reconfigure mining infrastructure

The comparison between the Oaxacan and Sonoran cases throughout the four factors worked as an analytical approach to dissect everyday practice with regard to mining infrastructure. In real life, the four factors are highly interlinked. Without coexisting normative frameworks, hybridisation of practices cannot take place (Factor One); without local authorities and their institutions, governance arrangements and alternative local economies cannot take off (Factors Three and Four); and without social mobilisation alternative narratives for challenging the status quo cannot be envisaged (Factor Two). In a nutshell, if a reconfiguration of infrastructural mining is to happen we need to pay attention on how narratives, practices and norms interrelate and unfold in the everyday (Lowndes & Roberts, 2013).

The contrast between the two cases drew upon their two main differences, the indigenous composition of the communities affected by mining and the presence/absence of mining infrastructure. It would be a misconception to assume that from this comparison we conclude that indigenous communities are more prone to resist mining than non-indigenous. Torres-Wong (2019) shows how indigenous communities in Mexico, Bolivia and Peru can also be pro-mining if the corporation negotiates compensation with leaders for their lands. Cananea, but also Colombian cases (Rodríguez Garavito et al., 2017), show how communities can be pro-mining as long as living and labour conditions are not undermined. However, as Tetreault (2019) argues, mining and its infrastructure impacting the environment through destruction of landscapes and contamination of land and water aquifers has increasingly prompted communities, indigenous or not, to question the value of mining at the expense of resources that build their basic wellbeing and dignity. Following Dinerstein's (2014) argument, when communities are impacted by

exclusion it is possible to identify common grounds for new forms of struggles despite their cultural, ethnic or national diversities. It has been this common experience of exploitation, neglect and displacement which led our comparison.

If infrastructural mining is to be reconfigured the combination of different normative frameworks has to be born in mind, as stated by legal pluralism and interlegality. The Oaxacan case showed that state recognition of customary laws opens spaces for indigenous communities to find creative uses of different norms to pursue their political goals. This includes resorting to their customary norms to undermine the value of mining while using legal tactics and state technical and financial resources to advance anti-mining stances. In contrast, the Sonoran case showed that in communities with a very strong mining presence, induced by a transnational corporation with enough resources to avoid state regulation, the CSR policy cannot be overlooked. Although CRS sits outside state institutions it, nevertheless, plays a predominant part in the normative framework regulating the community. Because the CSR policy was pro-mining, it inevitably reinforced the value that mining infrastructure has had for the development of the region.

Based on new municipalism and interlegality debates, the paper also underlined the importance of social movements as vehicles to (re)interpret normative frameworks in the everyday practice of living and governing. These (re)interpretations have allowed communities to envisage and put forward alternative political projects that can lead towards a more emancipatory infrastructural approach to help overcome marginalisation. Litigation has been a repertoire of action commonly used by Mexican indigenous groups across the country to defend their customs and territory. The two cases discussed show how opportunities can arise where indigenous tactics inspire non-indigenous communities. In particular, we showed the significant

role played by human rights NGOs in being the vehicle to communicate, translate and transfer litigation tactics to non-indigenous contexts.

Hybrid normative frameworks and litigation as a form of collective resistance were useful for Capulalpam authorities to gain legitimacy and challenge power relations to build an anti-mining planning policy. The absence of customary law in the Sonoran case and the historical presence of copper mining are perhaps the main differences which have prevented Cananea, and to a lesser extent the other seven municipalities along the river, to build an alternative narrative. However, what communities along the river have been learning is to resort more often to judicial means to challenge decisions imposed by state-level and federal government agencies. More needs to be done for building channels of communication and negotiation between the CCRS and municipal government to encourage and help authorities learn two things: the potentialities of a more hands-on approach to infrastructural mining decisions taken by higher tiers of government, and to move away and challenge these decisions when they become predatory to communities.

The Oaxacan case showed that the combination of hybrid normative frameworks, existing narratives of self-governance, and local authorities building upon the latter two factors was relevant in envisaging and implementing local decisions to create alternative economies. The anti-mining narrative became a significant element to ensure that eco-tourism thrived. This economic alternative was built on a circular economy that benefited many community members. In the Sonoran case, after the toxic spill, tourism was envisaged as a regional economic recovery programme, it relied on the commodity exportation model in which the mining sector was involved. In this case, tourism had a limited effect insofar as it reinforced the dominant narrative of mining pursued by state and national governments.

According to municipalism debates, the control of municipal resources has been key to develop emancipation. There will be variation depending on the specific conjuncture each locality presents; the Oaxacan case can be classified as more emancipatory than the Sonoran as the local control of resources has fed the indigenous struggle for autonomy. However, emancipatory glimpses were seen in the way the CCRS organised through the support of PODER. We do not want to romanticise or essentialise the indigeneity of Capulalpam. Its anti-mining stance is far from perfect; as we argue elsewhere, attempts to challenge this narrative through everyday practice is severely punished (Guarneros-Meza & Torres-Wong, 2022). And although gold mining is rejected, gravel mining for the construction industry is more accepted by the community. In Table 1 the comparison summarises the opportunities in which the reconfiguration of mining can happen.

	Oaxaca	Sonora
Normative frameworks	Coexistence and hybridisation of customary law and state law	Coexistence of corporate social responsibility policy and state law
(Glimpse of) emancipation?	Yes	No
Social movements	Multiple repertoires of struggle, including litigation and international advocacy networks	Litigation tactics through an incipient advocacy network with PODER
(Glimpse of) emancipation?	Yes	Yes
Local governance	Navigation in and out of (local) state institutions	Opportunities to learn how to navigate in and out of (local) state institutions
(Glimpse of) emancipation	Yes	Yes
Alternative economies	Tourism as an alternative to mining infrastructure	Tourism complements mining infrastructure
(Glimpse of) emancipation?	Yes	No

Table 1. Case comparison and opportunities for the reconfiguration of mining

We conclude it is useful to focus on these four factors to identify the extent to which communities can build an emancipatory strategy to reconfigure the meaning of mining infrastructure, it is through the socio-material relationships involved by infrastructure that this is possible. The nexus extractivism-infrastructure was helpful to spot the instances towards more emancipatory processes driven by ecology, human dignity and social justice; the nexus operationalised by new municipalism and interlegality offered the glimpses in which alternative forms to infrastructural extraction can be found. Because of the interrelatedness between types of infrastructures (i.e. mining and tourism), increasingly accentuated by large-scale projects, it would be valuable to apply the four factors to these infrastructural ecosystems; especially in localities where the presence of infrastructure has been key in defining subjectivities and in bringing together contradictory normative frameworks and (innovative) governance arrangements.

Notes

¹ Atlas of Economic Complexity URL: <https://atlas.cid.harvard.edu/explore/stack?country=138&year=2018&startYear=1995&productClass=HS&product=undefined&target=Product&partner=undefined> [Accessed 15 June 2021]

² The Sonora River Region is comprised of seven municipalities located to the south of Cananea Municipality: Arizpe, Banámichi, Huepac, San Felipe de Jesús, Aconchi, Baviácora and Ures

³ Interlegality also underlines the transnational character of legal plurality which allows individuals or groups to use international law *in* national contexts and *against* the state (Nickel, 2015).

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