Political Ecology of Mining Conflicts in Latin America

An Analysis of Environmental Justice Movements and Struggles Over Scales

Mariana Walter
PhD Thesis
Supervisor: Dr. Joan Martínez-Alier

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PhD Programme in Environmental Sciences

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Abstract

Latin America is currently one of the most attractive mining frontiers in the World, concentrating one third of global mining investments. However, as the pressure to extract ores grows, the region witnesses a wave of social mobilizations against the expansion of large-scale metal-mining activities. While communities claim that mining activities endanger their livelihoods, and despise their rights and their future, national governments and companies promote this activity as a source of development and wellbeing. Complaints are framed as being politically motivated or based on misinformation.

From a political ecology framework, nurtured by politics of scale studies, this thesis studies environmental justice movements contesting large-scale metal-mining activities in Latin America and their struggles over scales. Two different approaches are developed.

In a first approach, the thesis addresses how and why environmental justice movements have formed, which are their discourses, their claims and strategies and how these movements engage in struggles over scales, contesting scalar hierarchies and reclaiming communities' power to decide on mining projects. Action research methods were used to conduct an in-depth case study in Esquel gold mining conflict (2001-2003, Argentina) where a project was stopped by a local referendum. Moreover, primary and secondary sources were used to conduct a multiple case study analysis of the emergence and spread of other community consultations/referenda on large-scale mining activities in Latin America. In this research, conducted with Leire Urkidi, we studied the 68 cases of community consultations/referenda that took place between 2002 and 2012 in Peru, Guatemala, Argentina, Colombia and Ecuador. About 700.000 people participated in these consultations, expressing a massive rejection to mining activities. I conclude that communities are demanding recognition for local views on development that are not compatible with large-scale mining, given its impacts, risks and uncertainties. Conflicts are exacerbated by the fact that mining decision-making procedures cannot adequately accommodate local views regarding technical and non-technical issues at stake. Analysing the spread of consultations I claim that they are a multi-scalar institution that constructs a new scale of regulation (decision-making): local participation via referendum/consultation. Consultations emerge as a local democratic response to environmental injustices in contexts of repression and criminalization of activists, and gain legitimacy as they become spaces of participation for affected populations. Consultations are moreover a hybrid institution, promoted by alliances between social movements and local governments that reclaim and

re-signify municipal, national and international participation and indigenous rights and legislations. In this vein, consultations not only challenge hegemonic scales of meaning governing mining activities but re-construct and put in practice a new scale of regulation.

In a second approach, in collaboration with Sara Latorre and with the support of Carlos Larrea and Giuseppe Munda, social multi-criteria evaluation and scenario techniques were applied to structure the multi-dimensional implications of developing extractive activities in socially and environmentally sensitive locations. In this chapter on the Íntag mining conflict (Ecuador), I claim that this approach is able to make visible scales, social values and uncertainties that are made invisible by hegemonic discourses in the mining debate that focus almost exclusively on economic results at national level.

Keywords: Metal mining conflicts, political ecology, politics of scale, environmental justice movement, social multi-criteria evaluation, consultations, Latin America.

Resumen

América Latina es actualmente una de las fronteras mineras más atractivas del mundo, concentrando un tercio de las inversiones mundiales del sector. Sin embargo, mientras la presión por extraer metales aumenta, la región está viviendo una ola de movilizaciones sociales opuesta a la expansión de las actividades mineras a gran escala. Mientras las comunidades denuncian que las actividades mineras ponen en riesgo sus formas de sustento, desprecian sus derechos y su futuro, los gobiernos nacionales y las compañías mineras promueven esta actividad como una fuente de desarrollo y bienestar social. Las críticas son vistas como motivadas por intereses políticos o la desinformación.

Desde un marco de ecología política, nutrido por estudios sobre la política de las escalas, la tesis estudia los movimientos de justicia ambiental que se oponen a las actividades mineras metalíferas de gran escala en América Latina y sus luchas por las escalas. Se desarrollan dos aproximaciones diferentes.

En una primera aproximación, la tesis analiza cómo y por qué los movimientos de justicia ambiental se forman, cuales son sus discursos, sus demandas y sus estrategias y cómo estos movimientos se involucran en luchas por la escalas, disputando la jerarquía de las escalas y reivindicando el poder de las comunidades a decidir sobre los proyectos mineros. Métodos de investigación acción fueron utilizados para realizar un estudio de caso del conflicto minero aurífero de Esquel (2001-2003, Argentina) en el que se detuvo el proyecto a través de un referéndum local. Adicionalmente, fuentes primarias y secundarias fueron utilizadas para desarrollar un estudio de casos múltiples para analizar la emergencia y despliegue de casos de consultas/referendo comunitarias sobre minería a gran escala en América Latina. En esta investigación realizada con Leire Urkidi, estudiamos 68 casos de consultas locales ocurridas entre los años 2002 y 2012 en Peru, Guatemala, Argentina, Colombia y Ecuador. Alrededor de 700.000 personas participaron en estas consultas, expresando un rechazo masivo a las actividades mineras en la región. Concluyo que las comunidades demandan el reconocimiento de las miradas locales sobre el desarrollo que no son compatibles con la minería a gran escala, dados sus impactos, riesgos e incertidumbres. Los conflictos se exacerban por el hecho de que los procedimientos de toma de decisión no permiten incorporar adecuadamente las perspectivas locales referentes a aspectos técnicos y no técnicos que están en juego. Analizando la propagación de las consultas sostengo que es una institución multi-escalar que construye una nueva escala de regulación (toma de decisiones): la participación local a través de referendo/consulta. Las consultas surgen como una respuesta de democracia local a las injusticias ambientales en contextos de represión y

criminalización a activistas y ganan legitimidad en la medida que se vuelven espacios de participación para las comunidades afectadas. Además, las consultas son instituciones híbridas, promovidas por alianzas entre movimientos sociales y gobiernos locales que recuperan y resignifican derechos y leyes indígenas y de participación municipales, nacionales e internacionales. Así, las consultas no sólo desafían las escalas de significado hegemónicas que gobiernan a las actividades mineras, pero también reconstruyen y ponen en práctica una nueva escala de regulación.

En una segunda aproximación, en colaboración con Sara Latorre y el apoyo de Giuseppe Munda y Carlos Larrea, se aplicaron técnicas de evaluación social multi-criterio y de escenarios para estructurar las implicancias multi-dimensionales de desarrollar actividades extractivas en áreas social y ambientalmente sensibles. En este capítulo sobre el conflicto minero de Íntag (Ecuador), sostengo que esta aproximación permite hacer visibles escalas, valores sociales e incertidumbres nublados por los discursos hegemónicos en el debate minero que se enfocan casi exclusivamente en los resultados económicos a nivel nacional.

Palabras clave: conflictos mineros, ecología política, política de escalas, movimientos de justicia ambiental, consultas, evaluación social multicriterio, escenarios, América Latina.

Foreword

I have included as core chapters of the thesis three papers that address my research on extractive industries in Latin America. An in-depth case study of a key mining conflict in Argentina co-authored with Joan Martinez Alier, my advisor, published in the Canadian Journal of Development studies. An extended version of a paper co-authored with Leire Urkidi on the wave of community mining consultations in Latin America under review in Geoforum. And finally a paper submitted to Land Use Policy that addresses a multi-criteria evaluation of a copper mining project in Ecuador conducted between 2010-2013 in collaboration with Sara Latorre, a friend and colleague at UAB, Prof Carlos Larrea (Universidad Andina Simón Bolivar, Quito) and Prof. Giuseppe Munda (ICTA-UAB).

Before presenting the key contents of the thesis, I would like to signal some key research and work experiences that have shaped my way of thinking, doing and researching.

My first contact with research was in 1999-2001 as research assistant at the Universidad Nacional General Sarmiento (Buenos Aires, Argentina), where I took my Urban Ecology degree. From 2001 and 2005 (while studying), I worked too in a large International NGO in Argentina, participating in the elaboration and conduction of national campaigns related to management of toxic and urban waste, promotion of renewable energy. In this period I got involved in the first debates around large-scale mining activities in Argentina.

In 2006, stirred by personal and professional interests I applied to a Masters scholarship of the AGAUR (Agencia Gestio d´Ajuts Universitaris) and moved to Barcelona to start my Phd studies at ICTA-UAB under the supervision of Professor Joan Martinez Alier. Since 2007, I have devoted part of my time to conduct research (ALARM) and work in the assistance and coordination of different European projects (CEECEC, ENGOV). Most of my work during these years is not included in the core of the present thesis. However, these are key experiences that have contributed to build my views and conceptual framings.

In 2007, I conducted a case study research for the ALARM Project (Assessing Large-scale environmental Risks with tested Methods, EC FP7 project). The study analysed the impacts and perceptions of a biological invasion (*Cameraria ohridella* attacking the leaves of the horse chestnut tree in Paris). This research led to a research paper and a book chapter. In this research I concluded that the invasiveness of an ecosystem, meaning its

traits that make it susceptible to be invaded, are not only shaped by its ecological features but also by social organizations and policies.[1]

From 2008 to 2010, I worked with Leah Temper and Hali Healy assisting in the coordination of the CEECEC project (Civil Society Engagement with Ecological Economics, EC FP7 Project) led by Joan Martinez Alier. A collaborative project that aimed to enable Civil Society Organizations to engage in and lead Ecological Economics research through a number of coordinated activities. This project led to the organization of an –still ongoing- online course, where I teach an intensive week module and the publication of a collaborative paper and a book.[2]

The CEECEC project was followed by the EJOLT project (Environmental Justice Organizations, Liabilities and Trade, EC FP7), Coordinated by Joan Martinez Alier, Leah Temper and Beatriz Rodriguez Labajos where I have a minor involvement. I have taught for their online course (a module on environmental conflicts) and collaborated in activities and reports related to mining struggles and environmental in-justice in the world.[3]

During 2009 and 2011, I have also produced, in collaboration with friends and colleagues, two publications where I was able to discuss and expand some key debates on environmental struggles. With Leire Urkidi we discussed our field-work experiences, methodologies, conceptual approaches and findings and produced a comparative work.[4] With Giacomo D´Alisa and other colleagues, in the context of a THEMES Summer School, we conducted a research on the waste management crisis in Naples, expanding on issues of democracy and post-normal science[5]. These collaborative experiences have been relevant to my conceptual and methodological approach to mining conflicts.

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In 2010, I contributed to a special section in the journal of Ecological Economics where we explored the connections between the growth of social metabolism and the formation of environmental conflicts.[6]

Since 2011, I´m assisting Joan Martinez Alier in the coordination of a Work Package on extractive conflicts in the ENGOV project (Environmental Governance in Latin America, Fp7 project 2011-2015), coordinated by CEDLA (University of Amsterdam). In the context of this project I have participated in the publication of papers and a special section (apart from two of the three papers that compose this thesis and are not listed here).[7] For this project I have also co-authored a Policy Brief related to my research on mining consultations.[8]

Besides these activities I have worked as assistant professor. I highlight two experiences. In 2011, in collaboration with Leire Urkidi and Amaranta Herrero we taught in the Environmental Sociology class of the Environmental Science degree at the UAB. In 2013, I gave a 20 hs module on Ecological Economics and Political Ecology in the PhD program on Latin American Studies of the Universidad Andina Simón Bolivar.

I have also produced and collaborated in other publications that have been partially included in the introduction of this thesis.[9]

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Introduction

The extraction of raw materials in Latin American countries (LAC) has jumped from 2400 million tonnes in 1970 to about 8300 million tonnes in 2009. This extractive boom is particularly significant for metal ores. While in 1970 the weight of industrial and metal ores accounted for 10% of the total material flows of Latin America (LA), in 2009 they reached the 25%. In fact, in 2009, industrial and metals ores were, after biomass (soy, cereals, wood, fish), the second material extracted and, in part, exported in the region, accounting for 2100 million tonnes of ores (West and Schandl, 2013, UNEP, 2013). In 2012, LA provided 45% of the global copper output, as well as 50% of silver, 26% of molybdenum, 21% of zinc and 20% of gold (Henriquez, 2012), attracting a third of global metal-mining investments (210 US$ Billions) (Ericsson and Larsson, 2013). This thesis studies the environmental conflicts that are emerging with the expansion of the metal extraction frontier in LA.

In late 2013, the Latin American Observatory of Mining Conflicts (OCMAL), a network of LA organizations that records large-scale metal mining conflicts, accounted for 198 active conflicts affecting 297 communities. According to OCMAL (2013), Peru (34), Chile (34), Argentina (26), Brazil (20), Mexico (29), Colombia (12), Bolivia (9) and Ecuador (7) have the highest number of mining conflicts. The impact of large-scale metal mining activities on water, land, health, livelihoods and rights rises concerns among communities that feel disempowered by official decision-making procedures that prime eco-efficiency and pecuniary criteria. Governments and mining companies frame complaints as being politically motivated and misinformed.

Common mottos such as el *agua vale más que el oro* (“water is worth more than gold”), *no a la mina* (“not to the mine”), *agro sí mina no* (“agriculture yes, mine no”) can be heard and read throughout LA, from México to Argentina, drawing invisible lines that connect people, movements and strategies throughout the continent and the world. For instance, as studied in this thesis, from 2002 to 2012, about 68 bottom-up similar consultations/referenda on large-scale metal mining projects have been conducted in 5 Latin American countries (Peru, Guatemala, Argentina, Colombia, Ecuador). About 700.000 people have voted in these events rejecting mining activities massively. These are not consultations fostered and regulated by national governments or mining companies, as part of official procedures (i.e. *consulta previa*), but are

promoted by social movements contesting the expansion of the mining frontier in their lands.

The process of emergence and spread of large-scale metal mining conflicts and consultations in the region is not only rising significant questions regarding how and why this process is taking place, their actors, discourses and strategies, but also signalling the complexity of the spatial dynamics at play. Mining conflicts are becoming arenas of struggle over the hegemonic narratives and scales defining what is at stake with mining activities and who has the power to decide over these activities.

This thesis studies large-scale metal mining conflicts in LA from a political ecology approach. After this introduction, the thesis continues with an explanation of the key questions and aims that guided the research. Afterwards, the conceptual framework of the thesis is outlined. Then, the sources and methods used are presented. The following chapters correspond to the results of the thesis consisting of three articles. Chapter 1 is an in-depth case study of Esquel gold mining conflict (Argentina). Chapter 2 is an analysis of the wave of community mining consultations in LA from 2002 to 2012. Chapter 3 is a social multi-criteria conducted on the copper mining conflict in Íntag (Ecuador). Finally I conclude highlighting the main findings and the contributions of the research presented.

1. Aims and Research questions

This thesis studies, from a political ecology perspective, large-scale metal mining struggles. Three different and complementing approaches are developed:

-**An in-depth case study**. This approach aims to study a key case of mining struggle, analysing how and why it emerges, how it develops, its main stages, its main actors, their discourses and strategies and outcomes.

-**A multi-case study**. This approach aims to study the process of emergence and spread of community consultations on mining activities in LA. I aimed to study how and why communities in different contexts are conducting similar consultations where communities at large are called to vote in favour or against large-scale mining projects in their localities.

-**A social multi-criteria approach on a mining conflict.** The use of social multi-criteria approaches to structure the multi-dimensional implications of developing mining activities in socially and environmentally sensitive localities is explored. Scales,

values and uncertainties made invisible by hegemonic discourses, are made visible by this approach. An application for a mining conflict in Íntag (Ecuador) is developed.

A case study approach: Esquel mining conflict

This thesis starting point is the in-depth study of Esquel gold mining conflict (Argentina, 2002-2003), an empirically and theoretically relevant case.

The Esquel conflict opened the first national debate (in Argentina) on the economic, social and environmental impacts and trade-offs of developing large-scale metal mining. With some perspective now, Esquel has been a key milestone in the current wave of socio-environmental conflicts in Argentina, where not only mining but other environmental matters have gained public relevance (paper mill conflict with Uruguay, Riachuelo river pollution, toxicity of GMOs agrochemicals) (Svampa and Antonelli, 2009). The environmental justice movement born in Esquel has also consolidated certain ways to organize grass-root struggle (participative horizontal assemblies) and innovative strategies such as internet activism (i.e. www.noalamina.org), consultations (consulta popular) and campaigns to ban large-scale mining at the provincial level that have inspired other movements inside and outside the country (Svampa and Antonelli, 2009, Reborati, 2008). From 2003 to 2008, anti-mining movements involved in conflicts throughout the country have succeeded to obtain bans on large-scale metal mining in 6 out of 23 provinces in Argentina (Walter, 2010).

The Esquel conflict emerged in the beginning of the 2000s, in the midst of Argentina´s mining boom and in the context of high poverty (the income of 57% of the population was below the poverty line) and unemployment rates (21.5%) (EPH 2002). In this context, mining projects were presented by national and regional governments as an opportunity to boost economies and create employment. However, the conflict that emerged in Esquel shaked the way mining debates were framed by its proponents – focusing on the economic and employment benefits of this activity- rising new debates regarding the impact of cyanide, on water quality and availability, health, local livelihood or indigenous land rights. One of the key events of Esquel case has been the organization of a municipal referendum (*consulta popular*), the first mining referendum of Argentina. In this event, 81% of the 75% eligible voters of Esquel (municipality inhabitants) voted against the development of a large-scale gold mine, a process that led to the first provincial large-scale metal mining ban of the country.

In this in-depth case study I analyze the context and process of emergence and development of the mining conflict, its key events, actors, discourses, strategies and outcomes. Some key questions resonate in this case: why are poor communities mobilizing against an activity that could bring employment and the improvement of local economies? Are these conflicts, as claimed by the regional government and the mining company, the result of a poor communication campaign, the ignorance or inability of local communities to understand the technical features of mining projects?

The main question that drives this chapter is:

- How and why are actors mobilising against large-scale mining activities in Argentina?

The sub-questions are:

- Who are the actors mobilising against large-scale mining?
- Why do these actors mobilise against large-scale mining activities? Which discourses do they use?
- Which are the strategies deployed?
- Which are the outcomes of these strategies?

A multi-case approach: mining *consultas* in Latin America

One of the key strategies deployed by the social movement that led the opposition to mining activities in Esquel was the organization of a municipal referendum, an experience that had a unique precedent in Tambogrande (2002, Peru). This was one of the singularities of the Esquel case, a key event that lead to stop the mining project in dispute and to the success of the social movement demand. As the 2000s advanced, news on new and strikingly similar consultations in other parts of Peru and Argentina, but also other countries started to circulate in activist and regular media. This unexpected phenomena, was rising significant questions: Why and how are communities in different countries and contexts conducting consultations? Are these events connected and how? If they are, how are consultations experiences travelling? Which are the outcomes of these consultations?

Scholar attention was centered in a handful of key cases, mainly the first four. After a first exploration it seemed empirically and theoretically relevant to address the overall process of emergence and spread of consultations in Latin America, exploring their contexts of emergence, promoters, supporters, scalar dynamics, institutional and

scalar features and outcomes. Studying this process provided the opportunity to analyze LA mining struggles from a regional perspective while addressing an increasingly significant and under-studied process: the spread of community consultations in Latin America.

Moreover, this study allowed me to further explore one of the lines of research that the conclusions of Esquel case was opening: the significance of struggles over scale in mining conflicts. In Esquel, the consultation played a key role framing the decision to develop a large-scale gold mining project as a democratic decision to be made locally, empowering affected communities. The multiplications of consultation cases seemed to point to the significance of scales, not only as mere settings of social struggle, but as stake in the struggle (a relevant line of research as pointed by Brenner, 2001, 608). The scale becomes itself an issue of contention. Community consultations presented a valuable and singular case of study to explore how environmental justice movements struggle over the hegemony of scales governing mining activities in LA.

The guiding questions in this research were:

- How and why have consultations emerged and spread?
- How are community consultations challenging the hegemonic scales governing mining activities?

The key questions that lead the examination of the consultations cases were:

- Where and when have these consultations taken place (characteristics of the place, date, and context in the conflict development)?
- What were the features of the mining project and company.
- Who were the actors promoting these consultations and their supporters, and which were their scalar features?
- What was at stake with the mining project, which were the mining impacts denounced by local communities and which were the characteristics of the metal mining project proposed?
- How were these consultations conducted (features of the formal/informal institution, outcome, who votes/doesn't vote, how do they vote)?
- Which were the main outcomes/consequences of the consultation?
- Which were the spatial connections between cases?

A Social Multicriteria approach

As signalled in Esquel case and illustrated in other LA countries in the consultations paper, LA governments are promoting mining activities putting forward a discourse that stresses as legitimate dimensions of debate the national scale, pecuniary criteria and technological solutions to mitigate environmental impacts. Moreover, previous case studies also pointed to the role of mining formal assessment documents (e.g. Environmental Impact Assessments reports) and participation procedures (eg. public audiences, participation arenas) as elements that would exacerbate social unrest in mining disputes. This was triggered by the limitations of these procedures to incorporate local views and concerns. Furthermore, critical voices and local concerns regarding mining activities are delegitimized and even criminalized closing down social debate on the economic, social and environmental implications of developing mining activities (Saavedra, 2013, De la Torre, 2012, Veltmeyer, 2013).

In this context, this paper explores the potential of social multi-criteria evaluation (SMCE) approaches to structure the multi-dimensional implications of developing mining activities, making scales, values and uncertainties -that have been hidden by hegemonic discourses- more visible.

This approach was applied to a well-known long copper mining conflict in Íntag (Ecuador). Íntag case is known not only for the social mobilization that led to the expulsion of mining companies in the 1990s and 2000s but, centrally, for the local experience of organization and development of local projects (e.g. ecotourism, handicrafts, fair trade coffee). Recent attempts to reactivate the large-scale copper mine project by the Ecuadorian government have triggered old and new concerns and debates. In this vein, this study also aims to be politically relevant in a key moment of reactivation of the conflict.

2. Conceptual framework

2.1. Political ecology approach

Political Ecology provided to this thesis key tools to approach the study of environmental conflicts addressing issues of contention, power, institutions and scales.

As nicely put by Bryant (1998,1) political ecology examines the political dynamics surrounding the material and discursive struggles over the environment. The field of political ecology has a rich and diverse genealogy (Leff, 2012, Robbins, 2004, Watts and Peet 2004). Its roots can be traced to early studies that tackled power relations regarding the intervention of humans on the environment in the fields of cultural ecology, human geography and ethnobiology (e.g. Humbolt, Kropotkin, Reclus). It became a specific discipline in the early sixties and seventies, as field of political inquiry and political action in response to the irruption of the environmental crisis (Leff, 2012). Political economy, radical development geography, ecological anthropology and cultural ecology shaped some of the characteristic grounds of inquiry of this still expanding field (Blaikie and Broofield 1987, Bryant 1998, Watts and Peet 2004)

During the 1960s and 1970s, studies in the field of cultural ecology explored the links between culture and environmental management practices in terms of adaptative behavior with a closed ecosystem. However, criticism rose regarding the inability of these approaches to capture the role of wider political and economic structures (Peet and Watts 1996). In the 1970s and 1980s, neo-Marxist approaches gained room in an effort to integrate place and non-placed based approaches. In this vein, political ecology early works pointed to the need to politicize the environment and to integrate land-use practice with local-global political economy (Wolf, 1972, Cockburn and Ridgeway, 1979, Peet and Watts, 1996). Blaikie (1985) and Blaikie and Brookfied (1987) seminal works in the field pointed as a key source of environmental change and problems in the rural South the constraints to political-economic and action within global political economic forces. Such approach aimed to contest neo-Malthusian and modernization accounts that highlighted poverty, over-population, bad management, and ignorance as the main drivers of environmental degradation in the South (Robbins, 2004; Peet and Watts, 1996)

Raymond L. Bryant and Sinéad Bailey (1997) signals two key phases in Third-world political ecology studies. During a first phase, from the late 1970s and early

1980s, neo-Marxism approaches allowed to avoid the (apparent) apoliticism in the work of cultural ecologists and neo-Malthusian approaches. In this line of work, the dependency theory (e.g. Cardoso and Faletto, 1979) or world systems theory (Wallerstein, 1974) were developed. In this vein, during the first half of 1980s, neo-Marxism offered a useful framework to link local social oppression and environmental degradation to wider political and economic concerns (Watts, 1983, Bunker, 1985, Bryant and Bailey, 1997, Peet and Watts 1996).

From the 1980s, in a second phase, criticism regarding a deterministic neo-Marxism led to new research avenues. Post-Marxists, argued that production was one among other arenas for collective resistance, that groups other than the working class were becoming significant sources of social movement (Cohen 1982). Moreover, the emphasis on structure would obscure the analysis of resistance movements among politically and economically marginal grass-root actors, such as peasants in the south (Bryant and Bailey, 1997, Scott, 1985). In this phase greater attention was given to active processes of human agency (Cohen 1982). The emergence of challenging social movements –where the Latin America scene had a central role (Peet and Watts, 1996)- contributed to expand the field to new avenues of research.

In this stage, Political Ecology nurtured from a wide range of literatures, dialoguing and embracing -in ways that makes unfeasible to draw clear boundaries- with fields such as environmental sociology, environmental justice, ecological economics, social movement, feminist studies or discourse analysis (Scott, 1985, Agrawal 1992, Peluso 1992, Guha 1990). In this process, Post-Marxism, action-research oriented and post-structuralist ideals interwove the fabrics of Political Ecology. As nicely phrased by Peet and Watts (1996, p. 37), current Political Ecology approaches "find both a broader conception of the forms of contention (from class struggle to social movements to everyday resistance) and a deeper conception of what is contended (from ownership of productive resources to control over the human imagination)".

In his claim for a post-structural political ecology, Escobar (1996) argued that while political ecology studies the relationship between society and nature in contexts of power, studies should also include considerations on the discourses and practices through which nature is historically produced and known. Building on post-structuralism (Foucault, Deleuze) the focus is posed on the role of discourses in the construction of social reality, as constitutive of it (institutions, regimes of truth) (Escobar, 1996, Escobar, 1995). The recent expansion of studies on the coloniality of

knowledge (eg. Mignolo and Escobar, 2009) and epistemologies of the south (Sousa Santos, 2008), has been pointed as key Latin American contributions to political ecology (Leff, 2012).

In their review of Third World political ecology, Bryant and Bailey (1997) identify three key assumptions that inform the work of political ecologists. First, the understanding that costs and benefits associated with environmental change are for the most part distributed among actors unequally. Second, the unequal distribution of environmental costs and benefits reinforces or reduces existing social and economic inequalities. In this assumption, the inseparability of environmental and development concerns is stressed, as what affects the environment, affects the political and economic status quo and vice versa. Third, the notion that the unequal social and economic impact of environmental change also entails political implications in terms of the power of actors. In this vein, environmental change not only implies the creation of wealth for some and deprivation for others, it also alters the ability of actors to control or resist other actors.

Paul Robbins defines Political ecology as "an empirical, research based exploration to explain linkages in the conditions and change of social/environmental systems, with explicit consideration to relations of power". (Robbins, 2004, 12). Robbins highlights that political ecology explores social and environmental change with a normative understanding that there are better, less coercitive, less exploitative and more sustainable forms of doing things. In this line, he highlights a double endeavour of political ecology: to both critically explain what is wrong with dominant accounts of environmental change while at the same time exploring alternatives to address mismanagement and exploitation (Robbins, 2004). In a similar vein, this doctoral thesis presents a double approach to mining conflicts that studies these processes, and also explores the application of innovative methodologies, such as social multi-criteria to structure and make transparent the multi-dimensional implications of developing mining activities in sensitive localities.

Environmental conflicts[10]

The study of environmental conflicts and the social movements that are formed in these processes are among the main research lines of political ecology (Robbins, 2004). Political Ecology has offered to this thesis compelling approaches to analyze why environmental conflicts emerge in the South. In this section, I review some approaches to the study of environmental conflicts in the South, with a particular focus in Latin America.

The "post-materialistic" approach developed by political scientist and political sociologist that framed the emergence of environmental-related protests in countries of the global North as a shift in values was not able to explain why such protest would occur in marginal and poor communities of the South. The post-materialistic approach emerged in the Europe of the late 1970s, when trade union conflicts were loosing strength, materialistic concerns (such as housing, food) were satisfied and other non-materialistic dimensions, such as the environment, the quality of life, sexual freedom, human rights started to gain value (Inglehart, 1981, 1990). In this context, green parties arose, a portion of society sympathized or became member of environmental organizations, participates in the feminist, pacifist or students movement. These movements started to be conceptualized by European sociologists as New Social Movements (NSM) related to new post-industrial concerns (Touraine, 1974; Pichardo, 1997). Unlike previous categories, such as working class and class struggle for Marxism, NSM are plural in values and ideas, pragmatically-oriented, and propose institutional reforms that expand participatory mechanisms around decisions of collective interest (Melucci, 1994). In this context, the search of identity is pointed as one of the main facets of the formation of the NSM, replacing ideology as the unifying platform of collective mobilization (Laraña, 1994)[11].

However, as pointed before, such explanations would not explain the emergence of conflicts in poor countries. It was proposed that as environmental problems become increasingly evident and ubiquitous, environmental concerns rise in all sectors of

[10] Parts of this section are based on the book chapter: Walter, M., 2011. "Conflictos ambientales. Enfoques y clasificaciones". In: Alvarez Cantalapiedra, S. (Ed): *Convivir para perdurar. Conflictos ecosociales y sabidurías ecológicas*. CIP-Ecosocial/Icaria, Barcelona, 37-50.
And the paper I co-authored: Urkidi L. and Walter, M., 2011. "Concepts of Environmental Justice in Anti-gold mining movements in Latin-America". *Geoforum* 42: 683-695.

[11] The identity dimension is a relevant element in all forms of collective action, it is the sense of belonging, "us", that drives social movement, and should not be understood as NSM-exclusive, nor attached to a determined type of values (post-materialistic, for instance). Identities can also be used as weapons to legitimate collective claims at different scales (Haartad and Floysand, 2007).

society independently of their socioeconomic conditions (Jones and Dunlap 1992). Another line of work proposes an alternative reading to violent environmental conflicts in the South in terms of "environmental security" (Westing, 1986). According to this line of work, environmental conflicts in the South are basically conflicts *induced* by environmental degradation and resource scarcity (Homer-Dixon 1991, Baechler 1998). Political ecologists have criticised the theoretical and methodological basis of this work. Criticism point to the a-politic approach used and its neo-Malthusian views that un-critically associate poor population growth with increased natural resource pressures and emergence of conflicts over the access to scarce resources. Peluso and Watts (2001, 24), argue that these analysis should include the influences of international political economy and expand the horizons of what is contended and how, situating places and people within a theorized political economy to understand the various pressures of power affecting them and the specific circumstances that precipitate violence.

These narratives have been long contested by political ecologists and are present in a wide range of mainstream approaches to environmental crisis (Robbins, 2004, Peluso y Watts 2001). Behind these theories lies the understanding that in order to decrease environmental pressures, the economy of poor countries has to grow and people have to "develop", a process that would decrease environmental pressures.

From a political ecology approach the environment is not framed as a post-material luxury in communities in which basic needs are not satisfied, nor is economic growth seen as a solution. The thesis of "the environmentalism of the poor", also referred to as "environmental justice", states that mobilizations are born from diverse ecological conflicts produced by economic growth, which entails the extraction of resources and the production of waste. The environment is the source of material subsistence for the poor people, who complain against the extraction of resources and the risks of pollution these entail (Guha and Martínez Alier, 1997). In a way similar to complaints against pollution by "people of color" in the United States in the early 1980s (Bullard, 1990, 1993).

Environmental conflicts are framed as **ecological distributive conflicts**, referring to struggles over the burdens of pollution or over the sacrifices made to extract resources, as from inequalities of income and power (Martinez-Alier and O'Connor, 1996; Douguet *et al*., 2008). This is a concept born in the intersection between the fields of ecological economics and political ecology that links the emergence of environmental conflicts in the South with the growth of the metabolisms of societies in

the North. Social metabolism refers to the overall material and energy exchanges that occur between a society and its environment in order for the society to sustain itself or to grow (Fischer-Kowalski 1998). As the metabolism of societies grow, they demand and consume increasing amounts of materials, energy and water, expanding the commodity frontiers (Moore, 2000), displacing the geographic pressure to extract materials, process them, transport them and place the wastes that are generated (CO2, urban waste, nuclear waste) (Martinez Alier 2004). Ecological distribution conflicts emerge from the structural asymmetries in the burdens of pollution and in the access to natural resources that are grounded in unequal distributions of power and income, in social inequalities of ethnicity, caste, social class and gender (Martinez Alier, 1997a, Martinez Alier *et al*., 2011).

Ecological distribution points to processes of valuation that exceed the economic rationality in its attempts to assign market prices and chrematistic costs to the environment. Social actors mobilize for material and symbolic interests (of survival, identity, autonomy and quality of life), beyond strictly economic demands of property, means of production, employment, income distribution or development (Leff 2003).

According to the Chilean sociologists Sabatini and Sepúlveda (1997), (who have pioneered the study of environmental conflicts in Latin America) the current phase of capitalist accumulation is driving to an intensification of the pressures exerted on the natural resources, producing environmental degradation, scarcity and social privations, all propitious factors for the development of conflicts. They point that conflicts are more than mere disputes over property or access to resources, as they confront environmental and life worldviews. Disputes are related to the defense of the territories where people live and shape their dreams. In this vein, environmental conflicts can be seen as a dispute around territorial control (Friedmann, 1988, Sabatini, 1996, Svampa and Antonelli, 2009). The environment is not seen as a luxury asset, something superfluous, but rather a part of a complex system, in which physical, cultural, social, economic and cognitive issues articulate a relationship singular for that place and historic moment (Norgaard, 1984).

Escobar refers to “ecologies of difference”, proposing the concept of “cultural distribution” (Escobar, 2000, 2006). In this vein, he underlines that conflicts emerge from the different cultural meanings that are assigned to nature as “power inhabits meaning and meanings are a main source of social power” (Escobar 2008, 14). In this vein, political ecology studies the power relations and the processes of signification,

valuation and appropriation of nature that are not solved by the economic valuation of nature, or the incorporation of ecological rules in the economy (Leff, 2003).

Furthermore, recent developments in the study of environmental justice movements (EJM) offer compelling approaches to the examination of the different facets and claims made in environmental conflicts. Most scholars agree that the environmental justice concept came to be in 1982 when rural, poor, mostly African-Americans from Warren County (North Carolina, US) mobilised to oppose a PCB landfill next to their homes (Bullard, 1993, Schlosberg, 2007). Warren County's experience marked the emergence of a new type of movement in which environment, anti-racism and civil rights concerns were brought together (Bullard, 1990, Pulido, 1996).

Social movements engaged in environmental disputes identify themselves or are sometimes framed as EJM. The concept of environmental Justice (EJ) is becoming widely used by social movements and scholars in ways that challenges social justice classic approaches. During the past four decades of political theory research, social justice has been defined almost exclusively as a question of equity in the distribution of social goods and 'bads'[12]. However, environmental justice movements include a wide range of power, gender, identity, cultural and institutional concerns in their claims. In his review of EJ, Schlosberg's (2007) identifies three key dimensions of justice deployed by social movements and scholar work: environmental justice in terms of the fair distribution of the costs and benefits of polluting activities, the recognition of difference and, procedural justice (e.g. Participation, decision-making) (Dobson, 1998, Fraser, 1995, 1998, Schlosberg, 2007, Young, 1990).

Iris Young (1990) argued that, although distributional matters are crucial to achieve justice, it would be a mistake to reduce social justice to those issues. The distributive paradigm tends to focus the social justice analysis on the allocation of material goods, such as resources, income and wealth, or on the distribution of social standing. This perspective neglects the relevance of the social structure and the institutional context in distribution patterns. Young stresses the significance of power, decision-making procedures, division of labour, and culture. These aspects are relations of a different nature. According to this perspective, justice must also concern the

[12] Some authors sustain the need for a universal definition of EJ grounded on distributional evidence (Schroeder et al., 2008). They argue that a broader definition would weaken the concept's explanatory force.

processes that construct the material *maldistribution* (Honneth, 2001, Walzer, 1983, Young, 1990).

Some scholars highlight 'recognition' as a key dimension of justice (Schlosberg, 2007, Young, 1990, Honneth, 2001, Fraser 1998). According to Fraser (1995), while the 'redistribution' concept is tied to a vision of justice that aims to achieve social equality through a redistribution of the material necessities for an existence as free subjects, in the case of 'recognition' the conditions for a just society are defined as the recognition of the personal dignity of all individuals. Recognition not only refers to the individual right to self-recognition (Honneth, 2001), but most importantly, to the recognition of collective identities and their particular needs, concerns and livelihoods.

Procedural justice refers to the fair and equitable institutional processes of a State. Here, justice requires not only an understanding of unjust distribution patterns and the lack of recognition, but, more importantly, an understanding of the ways in which the two are tied together in political and social processes (Cole and Foster, 2001, Schlosberg, 2007). When "patterns of disrespect and disesteem are institutionalized" (Fraser, 1998), participatory inequities or exclusions (Agarwal, 2001) appear in institutions and decision-making processes. Cole and Foster (2001) highlight that even if an EJM could start as a reaction to certain unjust distributional trends, activists sometimes complain about their exclusion and marginalisation from official decision-making processes. Activists also point to the structural forces (class, caste, ethnicity and gender) that might prevent individuals from fully participating in decisions that affect their lives.

This section introduced some key trajectories and stands of political ecology and environmental justice that have informed this thesis. I highlight some key elements. First, the particular consideration to power relations. Second, an approach to environmental conflicts that considers their structural, but also agent-based and processual (history, interactions) dynamics. Third, the consideration of both the material practices (livelihoods, practices) and discourses. Four, political ecology provides a framework for both action-research and action-oriented (i.e. exploration of alternatives) approaches, a double track that is present in this thesis.

2.2. Metal-mining conflicts in Latin America

In this section, I present a brief review of four key approaches to the understanding and study of mining conflicts from a political ecology perspective. Particular attention is given to Latin America and large-scale metal-mining. The ideas and debates presented in the different sub-sections that follow are not seen as contradictory or competing, but as complementary facets and approaches that have nurtured this thesis.

Before developing this section I would like to highlight that Latin American environmental movements have been at the forefront in the construction of the political ecology agenda on extractive conflicts in Latin America (Bebbington, 2012a). Activist networks are increasingly recognized as relevant for research, not only as a source of valuable activist knowledge (Rocheleau *et al*., 1996, Escobar, 2008, Gerber, 2011, Martinez-Alier *et al*., 2011), but also for the development of extractive industries research in LA (Bebbington, 2012a) and as co-producers of concepts for environmental justice research (Martinez Alier *et al*., 2014).

Metals ores and mining features

Watts (2001) underlines in his analysis of petro-violence in Africa that the biophysical properties of natural resources matter in both material and analytical ways. He is not suggesting a sort of commodity determinism, but signalling to how the biological and geophysical properties of these commodities can be seen as intertwined with the social relations that are created around them. This subsection introduces some relevant classifications and features of metal ores and mining activities and their relation with the environment.

I would like to distinguish between the metal *per se* and the (related) features of the processes of extraction, processing, transport, consumption and final disposal or recycling. The main studies being conducted on the particular features of metal ores, their properties, uses and possible substitutions are been currently fostered in the midst of debates regarding when is the world or certain regions going to reach an - absolute or relative- “peak metal” (the time at which extraction can no longer rise to meet the demand) (Mason *et al*., 2011, Giurco *et al*., 2009, Giurco *et al*., 2010).

Studies on mining conflicts, tend to briefly signal some general features of large-scale metal-mining industries (not ores) (e.g. Svampa and Antonelli, 2009), in few cases

identifying some particular features that might make this activity prone to conflict (Hilson, 2002).

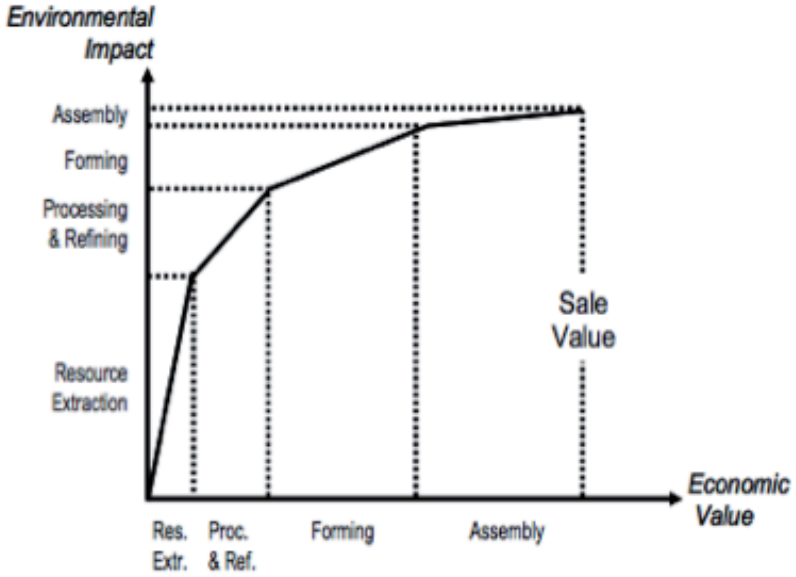
I would like to introduce some key distinctions. Ore mining includes a wide range of commodities that can be grouped in metals (e.g. copper, gold, silver, iron, bauxite, uranium, nickel), mineral fuels (oil, gas, coal, shale oil), industrial minerals (e.g. phosphates, asbestos, salt) and construction minerals (e.g. sand, gravel, stones). The general stages of the mining process are shared: exploration to locate and characterise the ore deposits, exploitation to mine the ores, mineral processing to refine the mineral and its transport to the consuming economies. This thesis focuses on large-scale metal mining.

From a social metabolism point of view another distinction can be made between preciosities and bulk commodities when considering metallic minerals (Wallerstein, 1974). Preciosities, such as diamonds, gold or silver have a high economic value per unit of weight but are physically not necessary as inputs for the metabolism of the importing countries compared to "bulk commodities" such as oil, gas, copper, iron, wood, or soybeans. This distinction does not mean that gold does not play an important social and economic role in the world jewellery making, in the world of love and marriage (as in India) and in the world of financial investments (Ali, 2006). But the difference stands from the point of view of the metabolism of the importing economies. Moreover, the social perception of gold mining in Latin America, often refers back to colonial times, to the encounter between Atahualpa and Pizarro in Cajamarca in Peru, and to the superfluity of gold. This memory of “plunder” is regularly brought up in gold mining conflicts in Latin America (Galeano, 1971, Urkidi and Walter, 2010). Indeed, some of the best known conflicts (Conga in Peru) are taking place a few miles from where Atahualpa was hold prisoner.

The mining commodity chains create networks between mineral-rich regions and exchange markets and consumption of these metals that drive changes in local land values and transform land uses (Bridge, 2004a). Giurco *et al*., (2010), outline the basic trends in the relationship between the economic value and environmental impact at the different stages of the mining production chain. This relates to the spatial (and temporal) distribution of the costs and benefits of the mining commodity chain. Figure 1 below shows the evolution of this relation for the production chain of a mobile phone. The initial stages are characterised by low value, but high environmental cost: resource extraction and then processing/refining have the highest impacts. Later stages, such as

forming and assembling, are estimated to have less environmental impacts, but generate the majority of the economic value. This relation presents a general trend of the impact/value curve that also applies more generally to other products.

Figure 1: Relationship between added economic value and environmental impact at resource processing stages.



Source: as reproduced in Giurco *et al*., 2010 from Clift and Wright, 2000.

Moreover, the socio-environmental impacts of resource extraction increase when the ore grades declines, as more waste is generated. In this vein, as the extraction frontier expands, the environmental impact curves associated with the first two stages of the production chain become steeper (Giurco *et al*., 2010). Table 1 presents for different metals the relation between the tons or ore mined (total ore extracted from a deposit for processing and extracting the targeted mineral) and the tons of metal "produced" of different metals. Preciosities such as gold have the highest generation of overburden. As the price per unit of preciosity metals is higher than for bulk metals, it becomes economically feasible to extract ores of decreasing quality or grade, this entails the processing of larger amounts of ore in open cast mining, generating increasing amounts of waste rock and eventually tailings. This has also been possible with the development of (more intensive) processing techniques that allow to obtain metals from decreasing ore concentrations (i.e. cyanide leaching for gold) (Bridge, 2004a).

Table 1. Metal Production and Ore Mined for Each Metal (1991)

Metal	Production (tons)	Ore Mined (tons)	Ore Mined Per Ton of Metal Produced (tons)
Iron	571,000,000	1,428,000,000	3
Copper	12,900,000	1,418,000,000	110
Gold	2,445	741,000,000	303,000
Zinc	8,000,000	1,600,000,000	200
Lead	2,980,000	119,000,000	40
Aluminium	23,900,000	104,000,000	4
Manganese	7,450,000	25,000,000	3
Nickel	1,230,000	49,000,000	40
Tin	200,000	20,000,000	100
Tungsten	31,500	13,000,000	400

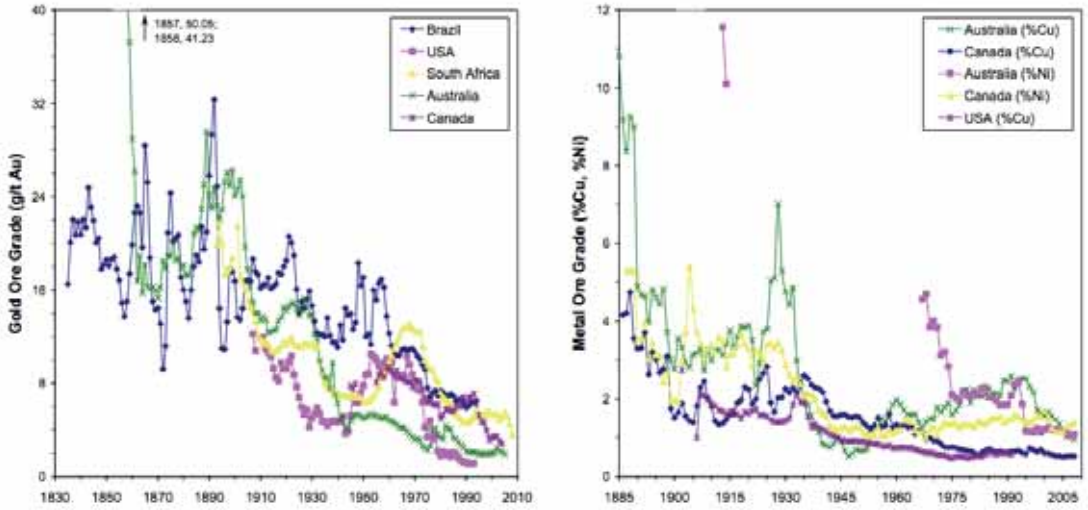
Source: U.S. Geological Survey; John E. Young, Mining the Earth (Washington, DC: Worldwatch Institute, July 1992); W.K. Fletcher, Department of Earth and Ocean Sciences, University of British Columbia

Moreover, other studies point to a worldwide decline in the quality of ores[13]. As the high-grade ores have been depleted, the mining frontier moves to lower-grade ores, with increasing environmental costs. Figure 2, indicate the declining trends for gold and copper ore grades in Brazil, Australia, US, South Africa and Canada (Giurco *et al*., 2010). The decline in the quality of ores has direct implications in terms of land intervention of mining activities, as larger and deeper mines (open-pit mining) have to be built and higher quantities of waste rock -especially sensitive in the case of sulfidic material that have the potential to generate acid drainages[14] - are generated (Mudd, 2009, 2010, Giurco *et al*., 2010).

[13] A recent industry study signals that "With declining ore grades exacerbated by increasing energy and other costs, and significant deposits being found at greater depths or in more remote areas, the average capital costs for copper production capacity in new mines increased an average of 15% per year over the past 20 years, with much of the increase evident since 2008," (SNL Metals Economics Group's Copper Study, 2012).

[14] Mining related chemical pollution can be generated by the release to the environment of reagents added during mineral processing, such as sulfuric acid used for the leaching of copper oxides, or mercury or cyanide used to process gold. And also by the oxidation that naturally occurs to minerals present in the ore as a result of exposure to air, water and/or bacteria.). Many metal ores, such as nickel, copper or lead occurs in the rock as sulfides. The contact with oxygen and water triggers oxidation process that form sulfuric acid. This process can generate the formation of acid rock drainages. This process has been pointed as one of the main environmental challenges of the mining industry (Giurco et al., 2010, Australian Government, 2007, Bridge, 2004a).

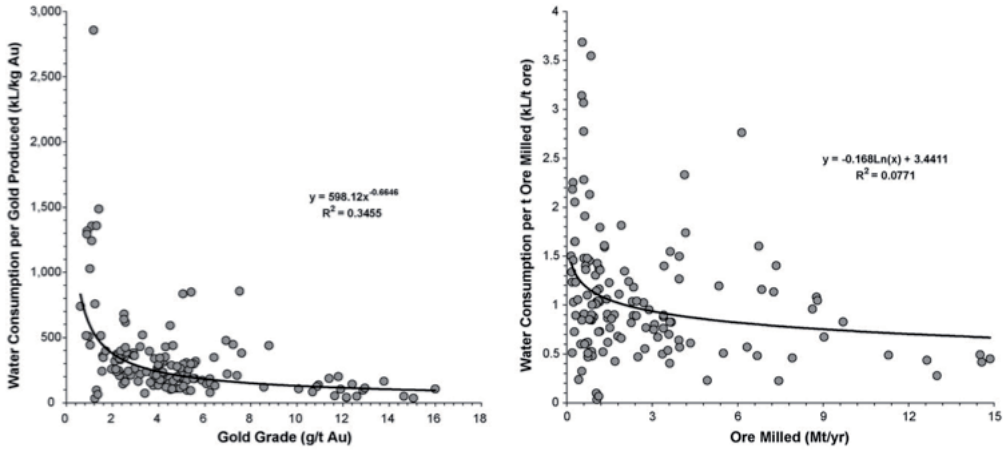
Figure 2: Decline in ore grades for gold and copper



Source: Giurco *et al*., 2010.

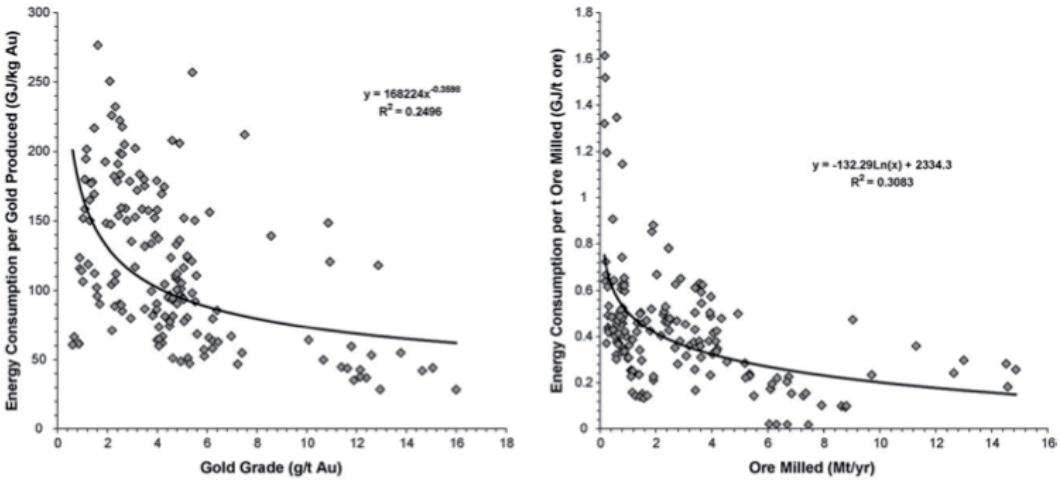
For instance, recent studies conducted in gold mining sector in Australia point that as ore quality decreases, the amount of water and energy used in the mining process increases significantly (Figure 3 and 4). This trend can be overlapped to other metals and environmental pressures, such as larger requirements of chemical in-puts, larger flows of water to treat and larger amounts of waste (Mudd, 2007a,b,c, Giurco *et al*., 2010).

Figure 3: Water consumption in gold mining per unit of gold and unit of ore in Australia



Source: Mudd, 2007c

Figure 4: Energy consumption in gold mining per unit of gold and unit of ore in Australia



Source: Mudd, 2007c

The significance of these trends grows as we consider the expansion of the mining frontier to sensitive and critical ecosystems such as tropical and cloud forests, also the home of indigenous people. As pointed by Bridge (2004a), an increasing proportion of mineral exploration and investment expenditures during the 1990s targeted the tropical Andes, the Guiana Shield, Indonesia, Papua New Guinea, the Philippines and, to a lesser extent, tropical west Africa reaching ecologically sensitive and/or have high conservation value areas. According to the World Resource institute, in 1997 energy development, mining and the roads, pipelines and settlements that come with it, represented the second biggest threat to forests worldwide, after logging, affecting 40% of all forest frontiers identified as under moderate of high threat by this organization (Bryant *et al.*, 1997). The International Union for Conservation of Nature (IUCN) has issued concerns related to the expansion of the mining, gas and oil frontier in World Heritage Sites, demanding for protection of these sites (IUCN, 2011). Furthermore, recent studies led by scholars and activists are pointing to the high overlap of mining concessions with the land of peasants and indigenous people in Latin America (Bebbington *et al.*, 2012). For instance, de Echave (2009, quoted in Bebbington 2012b) estimates that over a half of Peruvian peasant communities are affected by mining projects or concessions.

Moreover, its significant to point that in the case of mining activities, ecoeficiency and technological approaches are limited. As developed by Bridge (2004a), the

environmental impacts of mineral extraction can be reduced but not eliminated. Inputs to the mining process, such as water, energy, or chemical compounds can be reduced (per unit of production), the management of waste can be improved (e.g. better membranes to isolate waste from soil), and mining sites rehabilitated (e.g. re-vegetation), yet mineral mining necessarily modifies the environment to some degree. Moreover, operationalizing eco-efficiency in the mining sector is complicated by the fact that mining (unlike other industrial processes) is a segregative process that cannot avoid the production of large volumes of waste. This is increasingly significant considering the wider trends of declining ore qualities.

In this vein, Giurco *et al*., (2010), sustain that mineral resource depletion is as much about falling resource quality (decreasing ores) and accessibility (distant and difficult to extract, with higher social and environmental costs and related conflicts) as it is about a reduction in resource quantity and availability. In this line, Prior and colleagues (2012) suggest that the "peak metal" (the time at which extraction can no longer rise to meet the demand) has more to do with a social decision that considers the social and environmental implications of continuing to extract, than a question of metal quantities left.

In this sub-section I have introduced some key features of metal ores and metal mining activities signalling distributive aspects and some social and environmental significant features of metal mining activities that are shaping on-going debates and struggles on mining in Latin America.

Ecologically unequal exchange

Mining conflicts are framed as **ecological distributive conflicts**, highlighting structural features that led the emergence of mining conflicts. According to this stand, mining conflicts are the result of the **ecological unequal distribution** of the costs and benefits related to the extraction of raw materials led by the growth of social metabolism.

The fields of ecological economics and industrial ecology have come together with political ecology to study with quantitative methodologies the flows of materials extracted and exported from extractive economies and their environmental and social implications (Muradian and Martinez Alier, 2001, Muradian *et al*., 2012, Giljum and Eisenmenger, 2004).

In this line, it is argued that global geographical shifts in the extraction of

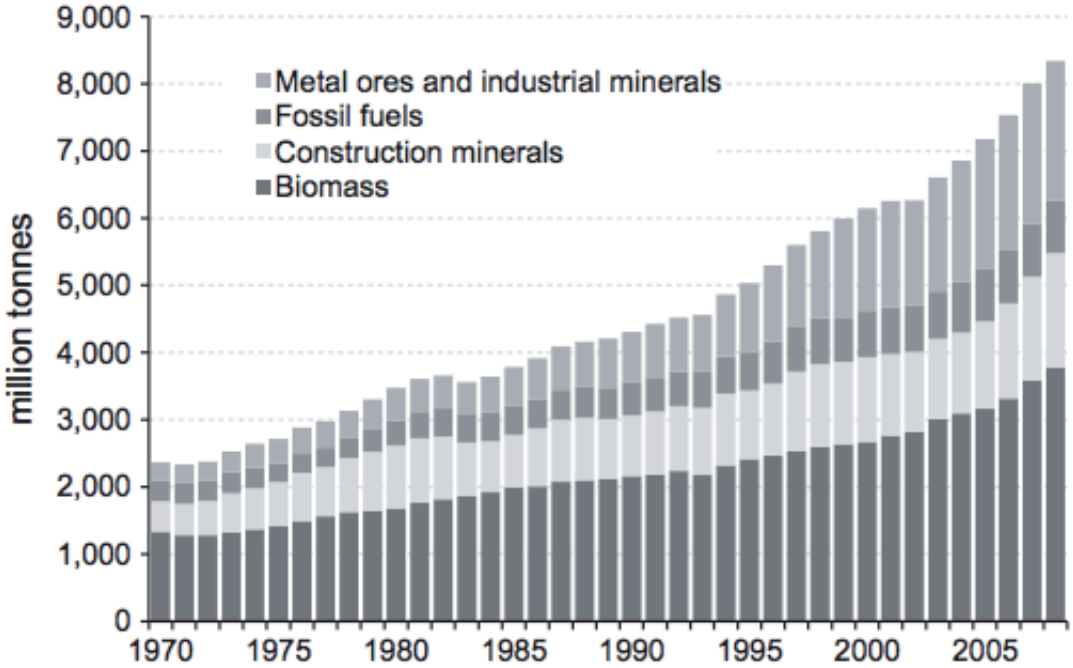
resources led resource-rich countries to specialize in the environmentally intensive extraction of natural resources. In this vein, developing countries are integrated into the world economy as resource providers, concentrating the environmental impacts of international consumption and exacerbating existing inequalities between North and South. Based on material flows trends, researchers stress the notion of cost-shifting (Perez-Rincón, 2006, Muradian and Martinez-Alier 2001a, 2001b).

R. Muradian, J. Martinez Alier and myself (2012), have pointed -in a special issue of Global Environmental Change- to how the recent growth of Asian economies, China in particular, is exacerbating the primarization of Latin American economies by boosting the pressure to extract environmentally sensitive resources (such as metal ores or fossil fuels) and the emergence of conflicts. The increasing significance of China in LA economies has led Fernández Jilberto and Hogenboom (2012) to suggest as metaphor that we are moving from the "Washington consensus" to a "Beijing Consensus".

Studies dealing with social metabolism indicators, such as material flow accounts (MFA)—that quantify in physical terms the flow of materials and energy in and out an economy yearly—have been conducted for the Latin American region (West and Schandl, 2012, 2013 see figure below) and at a country level, such as for Argentina, Chile, Peru, Mexico, Ecuador, Colombia and Brazil. These studies indicate a sharp increase in the intensity of resource extraction since the mid 1990s (Eisenmenger *et al*., 2007, Giljum, 2004, Perez-Rincón, 2006, Russi *et al*., 2008, Gonzalez-Martinez and Schandl, 2008, Vallejo, 2010, Vallejo *et al*., 2011, Perez Manrique *et al*., 2013). Some of these studies discuss the relations between these extraction trends and environmental pressures able to trigger environmental conflicts, particularly for mining activities (Martinez-Alier *et al*., 2010, Vallejo, 2010, Vallejo *et al*., 2011, Perez Manrique *et al*., 2013, Walter *et al*., 2013, Muradian *et al*., 2012).

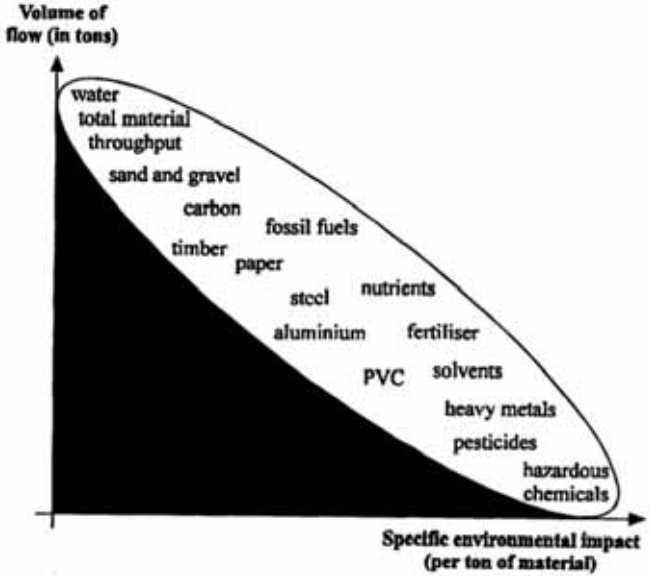
Figure 5 illustrates the sharp increase, by a factor of four from 1970 to 2008 in the extraction of materials in LA. An increase that is particularly significant for metal ores and industrial minerals. It is moreover relevant to signal that while these studies account for tonnes of material, they acknowledge that each type of material and its related processing entails different levels of toxicity and hidden flows (such as the water and energy or waste generated that are not always accounted). Figure 6, illustrates how different materials have differing levels of toxicity.

Figure 5: Domestic Extraction in Latin America by major category of materials for the years 1970-2008



Source: West and Schandl, 2013.

Figure 6: Environmental impact per ton of different materials



Source: Steurer, 1992

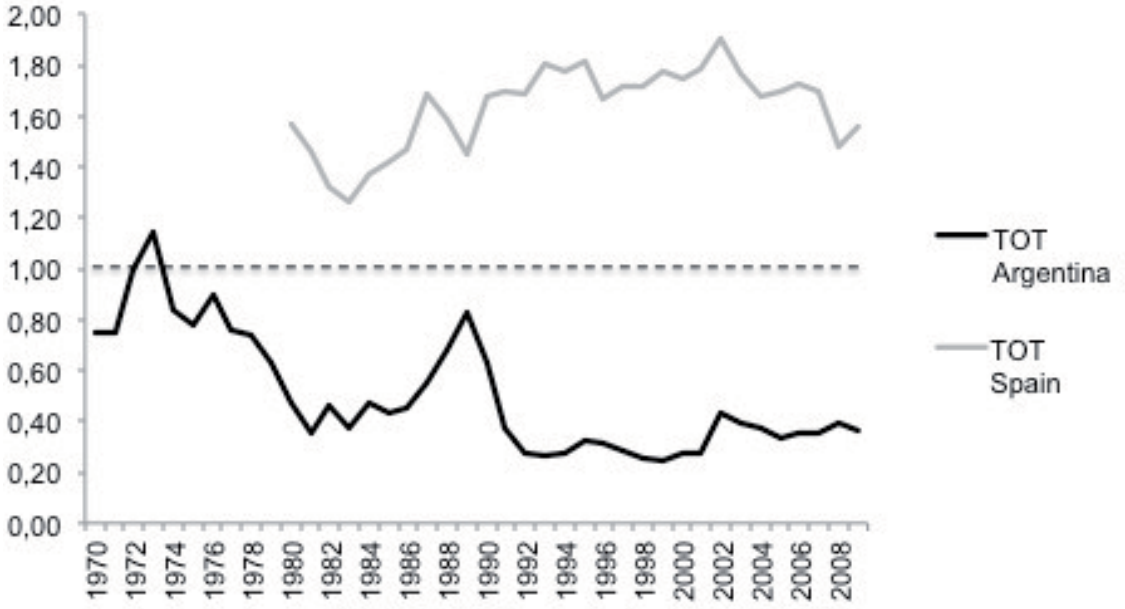
Material extraction trends vary among countries in LA. For instance, a recent MFA study conducted on Argentina (that I co-authored), estimates that between 1970 and 2009, the domestic extraction of metal ores increased -in tonnage- by a factor of 27. A process that has been accompanied by a growing number of mining conflicts (Manrique *et al*., 2013, Walter *et al*., 2013, Svampa and Antonelli, 2009).

Argentina has a large physical trade deficit and has suffered from unfavourable terms of trade during long periods of her history (see Figure 7). Argentina can be seen as a persistent follower of an (often interrupted) "staple growth path" (as proposed by Harold Innis for Canada). The "staple theory of growth" states that exports of raw materials can trigger economic growth (Innis, 1999). Its critics argue that reliance on commodity exports can lead to a development trap because declining terms of trade (Buckley, 1985, Perez Rincón, 2006). These trends also deplete natural resources, according to what has been called "the ecological Prebish thesis" (Perez Rincón, 2006)

Figure 7, presents the terms of trade (TOT) of Argentina and Spain from 1970 to 2009. TOT for Argentina are four times lower than those of Spain. TOT are said to deteriorate if the index decreases (the price of exported products tends to decrease compared to that of imported products). TOT for Argentina shows a downward trend during the period studied, declining from 0.75 to 0.37 (the number of tonnes that can be imported per tonne of materials exported)

The low price of primary exports does not compensate for the social and environmental costs involved in their extraction and trading (Jorgenson, 2009, Rice, 2007). In this sense, an ecologically unequal exchange arises (Hornborg, 1998, Giljum and Eisenmenger, 2004, Muradian and Martinez Alier, 2001a). There is an intensified exploitation of natural resources in order to purchase the same basket of imported goods, while environmental liabilities and social costs are not incorporated into the final prices of export goods (Robert and Parks, 2009). As Hornborg wrote in 1998, world metropolitan areas rely structurally on relatively cheap imports of energy and materials. The North today includes parts of China.

Figure 7: Argentina terms of trade (1970-2009) and Spain terms of trade (1980-2009).



Source: Perez Manrique *et al*., 2013.

West and Schandl (2012) analysis on Latin American material flows do not develop hypothesis regarding the conflicts related to the flows of materials. However, they provide significant results that are feeding on-going debates on the growing environmental pressures of extraction and the conflicts that emerge (Muradian *et al*., 2012). Researches aiming to study the relations between the emergence of extractive conflicts and social metabolic trends, such as MFA, or the exploration of "statistical political ecology" approaches (see EJOLT Project) that analyse these relations with quantitative methods are some of the newest arenas of exploration in this line of enquiry.

Post-neoliberalism, extractivism and post-extractivism

The expansion of the mining frontier and its related environmental and social impacts are also been framed in relation to the wave of neoliberal reforms fostered in LA in the 1980s and 1990s. These reforms are seen as part of a global displacement (globalization) of new modes of accumulation in a context of a crisis of over-accumulation of capitalism initiated in the 1970s (Harvey, 2004). In this vein, socio-environmental conflicts are framed as conflicts against processes of accumulation by dispossession, such as the privatization or enclosure of commons, the commoditization of ecosystem services and indigenous knowledge (Harvey, 2004).

During the 1980s and 1990s, many States in the world, including most LAC, adopted the neoliberal package of privatization, deregulation and liberalization policies. These reforms included the approval of mining codes and regulations able to boost extractive activities by enabling foreign investments and privatizations (Bridge, 2004b, Chaparro, 2002). These institutional settings played a key role facilitating the expansion of private mining investments in Latin America (Bridge, 2004b). In this vein, since the 1990s, metal mining investment have gradually increased in LA, becoming in the 2000s, and remaining until 2013, the main targeted region of the World (de Echave *et al.*, 2009, Bebbington, 2012b). In December 2012, LA concentrated 29% of global metal mining investments (210 US$ Billions) (Ericsson and Larsson, 2013). In 2011, 25% of global exploration investment concentrated in 6 LAC: Chile, Peru, Brazil, Colombia, Mexico and Argentina (Metals Economic Group, 2012[15]). These trends and references to the impacts of "neoliberal policies" or "transnational private investments" are common in studies on mining conflicts in LA.

However, recent shifts in LA politics are widening this debate opening new arenas of research regarding the emergence of extraction conflicts in allegedly post-neoliberal regimes that embrace discourses of social justice, poverty alleviation and democracy. As pointed by Gudynas (2010), the "LA turn to the left" is illustrated in a wide range of (left and center-left) LA governments. Gudynas signals as examples the administrations of the Kirschner couple in Argentina, Morales in Bolivia, Lula da Silva in Brasil, Correa in Ecuador, Lugo in Paraguay, Tabaré Vazquez and Mújica in Uruguay, Chavez in Venezuela and the first administration of Bachelet in Chile. El Salvador and Nicaragua can be added. Besides some significant differences between

[15] in Mining.com, May 2012

these governments, they share a critical discourse regarding the centrality of neoliberal market-led policies in LA States. These administrations have strengthened the power of states, stopping or even rolling back privatisations, achieved poverty alleviation objectives and promoted social wellbeing policies (health, education). In some cases, these governments initially have allied themselves with actors, such as peasant and indigenous groups that had been previously marginalized (i.e. Bolivia, Ecuador).

However, in all these governments, there has been a sustained, in some cases increased, support to extractive sectors that has, with few exceptions (e.g. Venezuela, Ecuador, Bolivia), maintained neo-liberal mining regulations. Moreover, there are not substantial differences in practice in the way the environment and its limits, or eco-efficiency is framed between these new and previous regimes (Gudynas, 2010).

As pointed out by Bebbington (2012a) for Latin America and Svampa and Antonelli (2009) for Argentina, only a handful of national, regional and local governments have addressed -more or less successfully under liberalizing international pressures- social movements demands to limit or prohibit mining activities (e.g. Costa Rica, El Salvador, six provinces in Argentina, many local municipalities of LAC). Furthermore, Peruvian, Ecuadorian, Argentinean, Guatemalan, Mexican, Colombian among other LA governments are publicly de-legitimating and criminalizing extraction-related protestors, labelling them as "terrorist", "extortionist", "childish", "anti-development", "infantile leftists" (Bebbington, 2012a,b, Gudynas, 2012). Claims that peasants and indigenous populations have not the knowledge required to correctly assess and decide on mining issues or are influenced by international radical movements have been made in Peru, Ecuador, Argentina, among other countries (Svampa, 2012, Bebbington, 2012a, b, Latorre and Herrera, 2013). In this vein, studies on mining conflicts are increasingly engaging in considerations on how the advancement of the extractive frontier is clashing not only with the *natural* environment but with democracy, participation and indigenous rights and ideals (Svampa, 2012, Latorre and Herrera, 2013).

In this vein, M. Svampa (2012) and A. Bebbington (2012a), signal that one of the striking features of the extractive boom of the last decade in LA has been the convergence among evidently neoliberal regimes (e.g. Peru, Colombia) and post-neoliberal ones in the way these approach the expansion of extractive industries and manage the conflicts associated. Svampa (2012) has referred to this process as a shift from the "Washington consensus" to a "commodities consensus", underlining how

under different political projects the dependence and support to extractive activities remains or even deepens.

A distinction has been made between “extractivism” and “neo-extractivism” (eg. Acosta, 2012). While the importance weight of raw material extraction and exports in LA economies has a long history that can be traced back to colonial times, the role of States (and the size of material flows) differs in these new LA regimes. States are becoming key actors in the extractive sector, not only with the creation -or reinforcement- of public mining companies, but also with the redrafting of mining regulations that aim to improve the State capture and social investment (poverty alleviation policies) of the pecuniary benefits of extraction (royalties, mining rents). “Neo-extractivism” underlines the shifting role of States in the extractive sector and the new way mining rents are being invested socially. This difference has also been referred in terms of two varieties of extractivism: compensatory-redistributive and neoliberal (Gudynas, 2012, Martinez Alier *et al*., 2014). The first one increases fiscal pressure, enforces royalty payments and increases the share of state-expenditure in GDP. It is extractivist and post-neoliberal at the same time. The political nature of this regime is a subject of debate (which I leave aside here).

Moreover, these political processes have been accompanied by a commodity price boom that stated in the 1999 for oil and by mid-2000s reached both crude, oil and metals (see Table below). As pointed by Hogenboom (2012a), these trends boosted revenues and profits and massive new investments in resource rich countries. For instance, the revenues from copper extraction in Chile increased 12 times, reaching 46 times in Peru (Campodónico, 2008, Hogenboom, 2012a).

Table 2: Indices of Prices of Primary Commodities 2001-2010 (Index 2000=100)

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Minerals and Metals	89	87	98	137	173	278	313	332	232	299

Source: United Nations, 2011

There is an expanding research avenue that explores if and how "neo-extractivist" modes of mining exploitation are able to exorcise the "resource curse". (Acosta, 2012, Acosta 2009, Thorp *et al*., 2012, Arrellano Yaguas, 2011). The resource curse or paradox of plenty, points that countries that have an abundance of natural resources, particularly non-renewable ones, tend to perform worse in terms of economic growth and development outcomes than those that have less dependence on natural resources (Auty, 1993). Sala-i-Martín and Subramanian (2003) signal the deterioration of institutions as the main mechanism explaining the relation between resource abundance and economic stagnation. Previous socioeconomic conditions and the use of inadequate polities have also been pointed as relevant factors to understand this paradox (Arrellano Yaguas, 2011).

It is out of reach of this doctoral thesis to develop the rich debates and disciplines engaging with "resource curse" studies. However, I would like to underline that most studies are analysing the impact of mining rents and windfalls at a national level. Only a few researches have studied this process at the local level where most of the contestation is occurring (see review of studies at the local scale in Chapter 3). Among these I highlight the work of Arrellano Yaguas (2011) that employs statistical methods to correlate the amount of mining rents that are received by the Peruvian regions and departments with the number of mining related-conflicts (registered for 2004 to 2007 by the National Peruvian Ombudsman) and wellbeing indicators. The author concludes that those regions and departments that have received more mining rents had more socio-environmental conflicts. Arellano signals that new conflicts are rising from groups that aim to improve their access to mining rents and benefits, or from unsatisfied expectations generated by mining activities. Moreover, Arellano signals that there are not evidences of improving economic and social wellbeing indicators and mining rents locally.

Besides extractivist and neo-extractivist distinctions, political ecologists and environmental activists are currently framing the debate in terms of the search of "post-extractivist" and "post-development" (Escobar, 1992, 1995) imaginaries and alternatives. In this line, they aim to challenge the apparently inevitable dependence to extractive activities and the way development is framed (Gudynas, 2011, IPPM *et al*., 2012 Escobar, 2012, Svampa and Antonelli, 2009, Alayza and Gudynas, 2012). In this vein, Escobar (2010) examines the socio-economic, political and cultural transformations that have been taking place in South America during the 2000s,

particularly in Ecuador, Venezuela and Bolivia. He claims that while at the State level transformations do not seem to venture beyond alternative forms of modernization, the discourses and strategies of some social movements indicate "radical possibilities towards post-liberal, post-developmentalist and post-capitalist social forms" (p.1). A process that is related with the political activation of relational ontologies, such as those of afro-descendent and indigenous people that are different from the dualist ontologies of liberal modernity.

Concepts such as Buen Vivir, Sumak Kawsay in Quechua, Suma Qamaña in Aymara have gained salience during the past years. Deeply ingrained in the ontologies and cosmovisions of indigenous people (Escobar, 2010) these concepts have surged as a reaction and alternative to conventional views on development (Gudynas, 2011, Acosta 2008).

The experiment of some post-neoliberal governments such as Bolivia and Ecuador to incorporate – with a significant influence of social movements and scholars- these concepts in State programs has triggered new lines of inquiry. Radcliffe (2012), studies the emergence and incorporation of this concept by LA post-neoliberal States such as Ecuador and Bolivia. She analyses how Sumak Kawsay was undertaken as part of the Ecuadorian post-neoliberal project, included in the Constitution and regulations, signalling that as these policies were implemented they "remained entangled in entrenched ways of doing development informed by neoliberal governmentalities, political expediency and naturalised social exclusion" (2012, 6).

This sub-section has briefly addressed key processes and debates that transverse mining conflicts in Latin America, particularly regarding the role of states and governments. It has also outlined some key features of the contexts in which and from which contestations emerge and dynamics are created. The fact that mining activities are framed by States, both neoliberal and post-neoliberal, as an unavoidable and needed sacrifice for the good of the whole society; that indigenous and anti-mining movements are de-legitimated and criminalized; or that concepts born from the resistance- such as Sumak Kawsay- are institutionalized in a way that the post-development challenge is disempowered, are drawing the particular scenario where mining contestations are emerging and deploying. Moreover, this review also aimed to signal how LA political ecologists have not only studied the processes signalled but also played a central role in promoting (and shaping) alternative frames aiming to challenge dominant accounts of development (e.g. Arturo Escobar or Alberto Acosta).

2.3. Mining conflicts: territorial change, actors and strategies

In previous sub-sections I have outlined some key frameworks and debates commonly present in mining conflict research. In this section, I signal some central approaches from actor-oriented and territorial change perspectives.

Geographers and anthropologists have addressed the emergence of mining conflicts in the context of the territorial dynamics triggered by mining industries in Latin America (Bebbington, 2007, Warnaars, 2013). These studies have signalled, for instance, that the impacts of mining occupation are not bounded to the extraction phase but can be traced to early stages of land concession in relation to speculation or exploration activities, or during the early contacts that mining companies establish with communities (Bebbington, 2012b). For instance, Bury (2004, 2005, 2007) analyses the effects of the mining expansion on rural livelihoods from the early arrival of mining projects, signalling that impacts have been very mixed, but mainly negative, especially regarding the impacts on environmental assets and social relations. The injection of cash into local economies generated by the land purchases conducted by mining companies, occurs in a short period of time and changes livelihoods in challenging ways, as peasants that sell their lands need to find alternative sources of family income (Bury, 2007).

Moreover, studies point that conflicts are also triggered over the ownership rights and prices of land, and in relation to concerns regarding the environmental impacts related to a shift in land uses from agricultural to extractive activities. In this vein mining activities are seen as overlapping with community and territorial claims, water resources (e.g. drainage basins) and livelihoods (Bebbington and Bury, 2009, Bury 2004, Martinez Alier *et al*., 2010, Urkidi, 2011a, Warnaars, 2013).

From this perspective, social mobilization around extractive industries have been defined as "a response to the threats that particular forms of economic development present, or are perceived as presenting, to the security and integrity of livelihoods and to the ability of a population in a given territory to control what it views as its own resources." (Bebbington *et al*., 2008, p. 2890). Moreover, as pointed by Martinez Alier (2001), these struggles are expressed in different languages of valuation such as, for instance, sacredness, health or territorial rights (Martinez Alier, 2001).

Studies have also addressed how mining conflicts are deployed and play in the

shaping and re-shaping of territories. Drawing from the comparative analysis of two mining conflicts (Íntag in Ecuador and Cajamarca in Peru), Bebbington *et al*. (2008) analysed how the different trajectories of territorial change have been shaped by factors such as the relative power of the mining company (size of the company), the power of the social movement (the ability of the social movement to manage internal differences, trans-national linkages) and the role of the government (relevance of mining in national economy). The authors conclude that the institutions, structures and discourses that govern the distribution of assets, the security and productivity are not pre-given. They are objects of struggle, re-worked and co-produced through the actions and interactions of a range of market, state and civil society actors.

Sociologists have approached mining conflicts dynamics studying their actors and strategies. In these approaches, social movement theories addressing structures of opportunity, structures of mobilization and framing processes are complemented to study how and why these processes of contestation are deployed (McAdam 1999, McAdam *et al*., 1999, De Echave *et al*., 2009, Urkidi, 2011a). De Echave and colleagues (2009), for instance, conduct a comparison of 6 emblematic cases of mining contestation in Peru proposing a conflict classification that considers two key elements.

Firstly, these authors signal the relevance of perceptions, such as trust among actors or the social and environmental risks. Secondly, they point to the ability of social movements to avoid fragmentation and build organizations. A process related to previous organizational traditions, structures of mobilization or the presence of intermediaries, such as NGOs that share part of the costs of mobilization and contribute to expand the reach of local contention.

Studies have also examined the role of mining companies new strategies to manage social conflict. The increased contestation generated by mining activities has also fostered a reshaping of corporative policies and discourses (Bridge and McManus, 2000, Bridge 2004a). In this vein, some researchers explore the role of corporate policies, such as Corporate Social Responsibility (CSR) practices in their attempt to address resource contestation. Studying the case of the first copper mine project in Ecuador (Condor Mirador), Warnaars (2011) argues that CSR practices have not only not contributed to mitigate local conflict, but the opposite. In a similar vein, Mutti *et al*. (2011) concludes on an account of Argentina´s mining company practices. Scholars are pointing to CSR programs as strategies deployed to disarticulate, anticipate and dissipate social conflict (Bebbington, 2010, Li, 2010), or as a way to divert

responsibility and avoid addressing the claims raised by affected communities (Himley, 2010).

This section has reviewed some key features and approaches to the study of mining industries in Latin America that have informed this thesis. Mining conflicts studies refer to structural drivers of extraction, environmental degradation and dispossession; to the fact that different valuation languages are used; to the particular features of large-scale metal mining activities in their competition with communities for resources (e.g. land and water); and the dynamic interplay of communities, transnational networks and movements, companies and states in the shaping of conflicts and the transformation of territories.

The exploratory research process of this thesis led to the need to address in more detail the complex multi-scalarity of contestation processes and their role in the emergence of innovative institutions (community consultations). The following sections introduce some key concepts of scalar politics that have nurtured this thesis. Afterwards, social multi-criteria tools are presented.

2.4. Politics of scale

Since Blaikie and Brookfield's (1987) foundational work, the relevance of addressing scales has transversed political ecology (Neumann, 2009, Paulson *et al.*, 2003). As pointed by Neumann, the concepts of place, region and scale have long been integral to the work of political ecologists analysis on human-environment relations. While political ecology developed and expanded, human geographers have been debating and re-theorizing such concepts (Neumann, 2009, p 398).

In particular this thesis has nurtured from the work of political geography in the conceptualization of scale in contentious politics, developments that offer compelling approaches to examine the discourses and scalar strategies deployed by social movements in mining activities. Local communities affected by mining projects sometimes network with organizations at national and international scales rearticulating their claims at these scales (Haartad and Floysand, 2007). Communities of Íntag (Ecuador) and Majaz (Peru) fostered Human Rights court cases against mining companies in Canada and UK. Indigenous groups in Guatemala present claims at the Inter-American Human Rights Commission. Affected communities in Pascua-Lama (Chile) and trans-national networks foster international campaigns against Barrick Gold mining project and its impacts on mountain glaciers.

There is an expanding field of research addressing, in particular, the politics of scale of environmental justice movements (Kurtz, 2003, Towers, 2000, Williams, 1999, Sze *et al*., 2009), offering rich cross-fertilization opportunities with political ecology to study mining conflicts.

Scale is conceived as an epistemological, not an ontological entity (Neumann, 2009). In this vein, politics of scale go beyond traditional geographic scales of analysis, such as urban, regional, national, to analyse the ways in which the social construction of scales shapes and is shaped by economic and political processes (Delaney and Leitner, 1997). In their analysis of the way scale has been tackled in contentious politics, Leitner *et al*. (2008) conceptualize scale "as a relational, power-laden and contested construction that actors strategically engage with, in order to legitimise or challenge existing power relations." (p159).

In this line, the mobilization of scalar narratives, scalar politics and scalar practices are seen as part of the struggles and strategies for political power (Swyngedouw, 2004). EJ struggles can be seen as struggles over the construction, reconstruction and power reconfiguration of scales and scale relations. In these struggles actors struggle to reshape the spatiality of authority and power (Leitner 1997, Swyngedouw, 1997, 2004).

It has been pointed that "politics of scale" approaches improve our understanding of EJ and EJM demands and outcomes, as ''the very concept of environmental injustice precipitates a politics of scale'' (Kurtz, 2003: p. 891). As we have seen, the concept of EJ was born in the 1980s alongside Afro-American social movements in the US fighting environmental racism (Bullard, 1993). The concept has since then travelled among social movements and has been appropriated by other social groups and movements in the world adopting different context-specific definition (Holifield *et al*., 2009). Debbané and Keil (2004) point that EJM are situated in contingent, multi-scalar and often quite different political, social and economic contexts where calls for justice are frequently based on localised perceptions. However, many movements do not necessarily frame themselves as EJM, but do focus on the relation between social inequalities and the environment (Carruthers, 2008, Urkidi and Walter, 2010, Reboratti, 2008).

Studies have pointed to how "jumping scales" processes contribute to empower EJMs and their claims at multiple scales. The concept of jumping scales addresses the ways politics are spatialised by contracting and stretching objects across space (Smith,

1993). The role of scale jumping has been examined in a wide range of social movements, such as the environmental justice, peasant, indigenous, labour unions, among others (Perreault 2003, Urkidi 2010). Jumping scale processes were key in the dynamic framing of environmental justice claims in two anti-mining movements in Chile (Pascua-Lama) and Argentina (Esquel) (Urkidi and Walter, 2011). Anti-mining movements in Tambogrande (Peru) were able to network with organizations at national and international levels, reframing their narratives at different scales gaining leverage in their struggle (Haarstad and Floysand, 2007).

Scalar processes such as scale jumping suggest that globalization should not be seen as a space restructuring that only favours the mobility of capital but also as an opportunity for new political action (Haarstad and Floysand, 2007). Scale jumping also facilitates the access to (and formation of) transnational (advocacy) networks (Keck and Sikkink, 1998), where activists meet, exchange, learn and construct their social capital improving the way they frame their political claims and negotiate with State and private actors (Perreault, 2003, Bebbington, 1997). In anti-mining conflicts in LAC, large EJMs such as the OCMAL at continental level, REMA in Mexico, Censat in Colombia, CONACAMI, some years ago, in Peru or "No a la mina" in Argentina must be mentioned.

In scalar processes such as scale jumping, the importance and role of some geographical scales are reasserted in relation to others, creating sometimes entirely new scales, changing the geometry of social power, empowering some actors while disempowering others (Swyngedouw 1997, 2004). It has also been claimed that one should be careful while considering the relation between empowerment and jumping scales. As power is not embedded in certain scales but is a relational effect of social interaction that is spatially mediated (Allen, 2003, Haarstad and Floysand, 2007). In this vein, scale jumping does not imply that "upper" scales entail more power that "lower" ones. Instead, jumping scale can be both horizontal and vertical (Swyngedouw, 1997); sometimes empowerment can come from having local struggles based on powerful ideas such as local democracy or indigenous territorial rights (Escobar, 2001).

Towers (2000) points that when communities contest social change at the scales they identify as favourable, a politics of scale is triggered. The ability of EJMs to strategically invoke environmental justice scales has been pointed as a key strategy to influence regulatory criteria at different scales of regulation (Towers, 2000).

Chapter 2 of this thesis is nurtured by and contributes to these discussions.

2.5. Social multi-criteria

Leff (2012) points that what is common to the wide diversity of disciplines that compose political ecology is their post-normal character. He is not only pointing to the way the socio-environmental systems are framed in terms of complex system, uncertainties, interrelatedness and feedbacks. Leff underlines that post-normal science (PNS)[16] contests the principles of epistemological representation (the identity of theory and reality), to incorporate, what Funtowicz and Ravetz (1993, 1994) called "quality knowledge" from "emergent complex systems" (Leff, 2012). Social multicriterial assessment methods were developed as decision-making aid tools able to manage complex socio-environmental decisions embedded in a PNS context (Munda, 2008).

Social Multi-criteria evaluation is among the latest developments of the multi-criteria decision theory family. In a first stage of the history of this field, these methods were framed as multi-criteria decision-making (MCDM) and aimed to provide "optimum solutions" via the resolution of structured mathematical decision problems that reflected the preferences of a mythical decision-maker (Munda, 2008). However, developments on the field of decision sciences pointed to the limitation of the "optimal solution" approaches, signalling the importance of the decision process (Simon, 1976, Roy, 1985). Simon (1976) distinguished between substantial rationality (the final choice) and procedural rationality (the form in which a decision is made). Roy (1985) underlined that the mathematical model used in a decision process does not inform if the decision is good or bad. However, the different aspects of a decision process that leads to a given decision play a relevant role in the quality of the decision and its final success. In this vein the Multi-Criteria Decision Aid (MCDA) developed by Roy (1985) was not focussed on the solution provided, but on contributing to actors in the elaboration of their preferences regarding a certain decision-making process. (Munda, 2008)

More recently, social multi-criteria evaluation (SMCE) (Munda, 2004) and participatory multi-criteria evaluation (Banville *et al*., 1998) have stressed the need to

[16] The "Post-normal" epistemological framework examines the limitations of "normal" science approaches where facts are uncertain, values in dispute, stakes high and decisions urgent (Funtowicz and Ravetz 1991, 1994a,b, 1997, 2002; Ravetz and Funtowicz, 1999; Gallopín et al., 2001). Kuhn (1962) paradigm of "normal" science, sees science as a cumulative process of puzzle-solving, crisis and scientific revolutions that advances towards a the better understanding of the world -or closer to "the truth" (at least in Kuhn first writings)- a process where quality is assured by the evaluation of scientific peers.

expand participation and the inclusion of social values in the multi-criteria assessments. While SMCE points to the need to have as participative and transparent processes as possible, it signals that participation is a necessary but a not sufficient condition to ensure the consideration of all relevant values and stakes (Munda, 2008). Moreover, SMCE has been developed to deal with the features of a complex word, where there are multiple dimensions, values and scales at stake.

3. Sources and Methods

> "Action research is grounded in the belief that research with human beings should be participative and democratic. Researchers working within this frame are charged with being sensitive to issues of power, open to the plurality of meanings and interpretation, and able to take into account emotional, social, spiritual and political dimensions of those with whom they interact." (Ladkin, 2005: 536)
>
> "A primary purpose of action research is to produce practical knowledge that is useful to both people in the everyday conduct of their lives". (Reason and Bradbury, 2001: 2)

This section develops the general methodological approach of the thesis and explains in more detail the specific sources and methodologies for the three following chapters.

From activism to action research

This thesis is born from a personal experience as activist that led me to explore with some distance and methodology processes that triggered my fascination and curiosity. This thesis can be seen as a *parcours* from activism to research and action research.

From 2001 to 2005, I was working full-time in an international environmental organization on environmental pollution issues in Argentina. During 2002 a growing number of people from Esquel (Chubut, Argentina) started to contact us (and other national and international organizations working on environmental issues) searching for information about the environmental implications of developing a large-scale gold mine

near their town. In 2002, this was a poorly known subject in Argentina and led us to prepare reports and information packages. At a certain point in 2002 any environmental organization present in Argentina had to have a grounded position on Esquel mining conflict and large-scale gold mining activities. As the conflict escalated, also did the requests of Esquel people to get more support from our organization. We decided that someone from our organization should move to Esquel to follow the conflict and coordinate, in direct dialogue with local activists, the support (coordinated mobilizations, advocacy, etc.) from the capital city where our organization was based. I was that person and lived in Esquel during February and March 2003, in the home of a key activist in the conflict, a chemist and university professor in Esquel that led, with another university colleague (both women), one of the first efforts to contest with technical grounds the arguments made by the mining company that the use of cyanide implied no risks to the community. During that period I attended all neighbours assemblies, participated in all marches and mobilizations, regularly met with activists, some became friends, coordinating the liaison with actions and support from Buenos Aires. In this vein, I was activist but acted more as a participant observant. I kept a note diary, collected leaflets and took pictures.

I was fascinated by the power of the movement that emerged in Esquel, the different trajectories of local activists that while initially supportive or uncertain became strongly opposed to the mining project, by the diversity of strategies deployed and how the local movement succeed to conduct a *consulta popular* (local consultation) in Esquel municipality. This was the first consultation on mining activities in Argentina and the second in Latin America, and it resulted in a massive rejection to the mining project that forced it cancelation. As months and years passed by, it became clear that Esquel experience had inspired movements all over the country and had changed the national environmental agenda.

In 2006, I revisited Esquel as a researcher for my Urban Ecology degree thesis (2006), later expanding my analysis for my environmental studies master thesis (2007). I conducted field work in the summer of 2006. At that time I was no longer working in the NGO. I conducted a review of secondary sources, newspaper pieces (including relevant adds and opinion letters) published in two local newspapers on the mining project and conflict tracing the first information records until a few month after the consultation. I collected as many leaflets and documents of the social movement and company (e.g. EIA) as possible. I conducted in-depth interviews to key activists

(different profiles), lawyers of indigenous groups in the region, politicians, authors of relevant reports in the conflict, representatives from the mining company in Esquel and journalists.

While initially concerned that my previous role would affect the research I realised that: a) secondary sources provided a key source of information of the evolution of the points of view and discourses of many actors offering a rich triangulation opportunity; b) I was able to have deep reflexive and retrospective interviews and discussions with activists, in a moment where there were serious concerns regarding what information was shared with whom, given increasing efforts of the company and government to re-launch the project; c) I also interviewed supporters of mining. And, while these interviews were quite superficial, I don´t think that was related to my previous role as activist (I was not identified by the interviewees as such) but the on-going effort of the company to clean its public image and leave behind the conflict. In this vein, the company was not only not willing to share old reports and projects EIA, but was not willing to provide out of the book opinions that could fuel new social unrest.

As years went by, the number of consultations, similar to that conducted in Esquel started to multiply in Latin America. This was happening at a time that I was working with a colleague, Leire Urkidi, in a comparative work of Esquel and Pascua-Lama (Chile) gold mining conflicts, later published in Geoforum and included as part of Leire's PhD thesis (Urkidi and Walter, 2011).

Moreover, during that time Leire Urkidi was conducting field work in Guatemala getting acquainted with Central America mining conflicts and I was conducting field work on Cordillera del Condor mining conflict (for the CEECEC project) in Ecuador, getting in contact with Andean social movements and the particular features of mining conflicts in this region. Addressing the spread of consultations in Latin America required some basic understanding of the diverse contexts, movements and trajectories of different places. We decided to undertake a second collaborative work that was based on our knowledge and networks in the different countries and regions where we had been working on and an exhaustive review of secondary sources, as it was financially not possible to conduct field work in all cases of consultations.

This second research presented methodological challenges. We aimed at systematizing all cases of consultation in Latin America. This required a systematic research country by country. And as regular information channels (e.g. main national

newspapers) proved insufficient, we concentrated our effort on regional activist networks and informal communications with colleagues and activists working on mining conflicts in different LAC. Nevertheless, we realised that those consultations that could have taken place as part of an internal decision-making process that were not communicated outside the community might have remained unseen to our research. This is perhaps the main limitation of this research. A second limitation relates to the availability of data for some cases.

The third piece in this thesis was born in the midst of meetings with environmental movements in Ecuador during the 2009-2010 when I was conducting field work in the Cordillera del Condor for the European project CEECEC. Activists from Íntag, in the north of the country, a well known mining conflict in Ecuador and Latin America, were concerned by signals of new attempts to exploit a large-scale copper mine in their valley, and the lack of consideration of their claims and concerns in on-going participatory planning processes led by the government. In these meetings I met Sara Latorre, an environmental sciences ex-student of UAB that was living in Ecuador, acquainted with ecological economics and about to enrol on ICTA´s PhD programme. With Sara we shaped the idea to conduct a social multicriteria study, obtaining the support of Íntag's organizations. This was promising for many reasons. First, there were no precedents of social multi-criteria studies on a mining conflict in the literature. Second, we felt this study could have real political significance for Íntag and for other Ecuadorian on-going conflicts. Third, having the support of local movements implied the access to a wide range or resources that would facilitate the work.

We looked for the technical support of Giuseppe Munda at UAB and of Maria Cristina Vallejo at FLACSO (Quito). We obtained a two years small grant from the Fundaciò Autonoma Solidaria of UAB. We lived in Íntag for three month (May-July 2010), visited its different parishes (*Juntas parroquiales*), organizations and projects, travelled Íntag roads, assessing the quality of public transport and services, conducted interviews and workshops, participated in assemblies and meetings.

In 2011, in the assessment stage of the study, the research was included as part of the European project ENGOV. Moreover, the social multi-criteria project expanded to include contributions and support of Carlos Larrea´s research group at the Universidad Andina Simón Bolivar. While initially this project was not planned to be part of a doctoral thesis, the large energy and dedication finally put in it by both Sara

and myself made me reconsider it In 2014 this study will be published as a 150 page book in Spanish in Ecuador. Here I present a 11,000 words article.

I would like to underline that while the social multi-criteria initiative was born from an activist demand, its development was consciously framed from the beginning as methodologically neutral as possible. The study was developed and presented as independent from local movements, although we would sometimes meet activist in the streets of small towns or participate in their meetings. We conducted first the interviews to pro-mining leaders and local politicians making clear our university affiliation and the objectives of the study. We invited all organizations to the workshops we held, even those supportive of mining activities, but it became clear that in order to obtain the views of mining supporters other methods had to be used, such as personal interviews. We put particular efforts to reflect in our work the views and concerns of those local people that were not necessarily against mining activities. This led to some tensions in local workshops where we presented preliminary results and anti-mining activists saw some information as a threat to the report message. However, while considering in detail their concerns and arguments, we acted considering that the political impact of such document would be grounded in its procedural quality and its ability to capture the wide range of perspectives present in Íntag.

Case and multiple-case study

As signalled by Yin (2014), case study approaches are a suitable research method, compared to others, when: a) the main research questions are “how” and “why” questions, b) the researcher has little or no control over behavioural events and c) the study focus is on contemporary phenomenon. In this vein, a case study is an empirical enquiry that investigates a contemporary phenomenon (the “case”) in depth and within its real world context. Particularly when the boundaries between the phenomenon and the context are not evident (Yin, 2014). In this vein, Esquel case was studied using a case study approach given the relevance of the case and the need to conduct longitudinal analysis that considers both moments and processes (Johnston, 2002).

Single and multiple-case studies are variants of case study research. The main limitations of multiple-case studies relate to the increased resources needed to conduct these studies and the methodological challenge posed in the selection of cases (Yin, 2005). In the community consultations research, cases were chosen according to certain criteria: cases in Latin America where there were local consultations that: a) were not

fostered by the central government or private companies as part of an official consultation process and b) were aimed at consulting the local citizens at large whether a community/municipality/district was in favour or against large scale metal mining activities in their territory. Moreover, the workload required to cover the LA region was distributed between two researchers (Leire Urkidi and myself).

Data collection

Documents and sources

A wide range of document sources were used in this thesis (Prior, 2005, Yin, 2005). An institutional analysis was conducted for Esquel and Íntag cases to characterize these places, their socio-economic and environmental trajectories, and build a map of actors (Munda, 2008). In this vein, statistical records were reviewed to assess population, migration, socio-economic features and trends. Reports and studies published by local and national administrations and scholars were reviewed. The legal mining framework, and other documents relevant to the conflict such as environmental and participation regulations were also reviewed.

Local and national newspapers were a main source of information, particularly for Esquel. When Esquel field work was conducted local newspapers were not available online, so paper archive work was conducted which resulted in a rich variety of data pieces, not only newspaper articles, but also company adds and readers letters. The pieces with the first mining news (mid 2001) until the news and analysis of the outcomes of Esquel referenda (April 2003) were photocopied and processed. National newspapers were also reviewed but provided poor additional information.

Reports and leaflets and other documents generated by actors in conflict were collected, including those of different social movements and organizations, mining companies and administrations. Technical reports, such as the EIAs of the mining projects of Esquel and Íntag were also reviewed, as other technical documents generated by mining companies regarding these projects.

Internet was also a key source of information considered in context (Markham, 2005). Internet was not only used as a tool to explore for unexpected sources, but also to access a growing number of platforms of local, national, regional and international social movements that disseminate information and map conflicts. This was particularly significant for the analysis on consultations, as most mass media are not publishing the

experiences of local consultations. For this research activist online platforms in English and Spanish, such as OCMAL, noalamina, minesandcommunities or Conacami, allowed to identify the occurrence of consultation experiences in Latin America. Once these experiences were identified, specific searches on local newspapers and national organizations allowed to complement data and identify possible interviews.



Field work in Íntag (july 2010). Painting, landscape and Chontal women handicraft project.

In-depth semi-structured interviews

Interviews can be defined as "social encounters where speakers collaborate in producing retrospective (and prospective) *accounts* or *versions* of their past (or future) actions, experiences, feelings and thoughts" (cursive in original) (Rapley, 2005, p16). Interviews are relational, locally and collaboratively produced.

For Esquel and Íntag, cases, a map of relevant actors born from a preliminary institutional analysis contributed to identify key interviews. Interviews were organized, in general terms, starting with the easier ones in terms of accessibility and time availability of the interviewee to those interviews that required more precision in the questions given the short time availability or difficult access to the interviewee.

Interviews had a defined introduction presenting the interviewer and explaining the general objectives of the interview. There was a predefined questionnaire guide that aimed to guide the interviewee to elaborate his perceptions and views (Rapley, 2005).

In the case of Esquel, I conducted 15 in-depth interviews to key actors in the conflict. The aim was to understand the personal evolution of views and opinions regarding mining activities and the key personal turning points. In this vein, it was relevant, if possible, not to cut the flow of ideas of the interviewee that had to remember, elaborate and build his discourse.

In the case of Íntag, about 50 interviews were conducted. Some aimed at identifying the needs and expectations of different actors in the conflict, the interviewee perceptions on the economic, social, and environmental capacities, and the desired and undesired futures for Íntag. Other aimed at characterising the different economic, social and environmental potentials of Íntag, as the on-going, foreseen and possible projects and their features. Interviews were prepared and conducted by Sara Latorre and myself, together or having one leading the questions and the other taking notes.

For the research on mining consultation, specific interviews were conducted to complete information on specific cases, also some long interviews were conducted adopting an semi-structured format. In other cases some short interviews were made to complete specific aspects of a case. Interviews and communications were conducted by both Leire Urkidi and myself depending on the case and country.

In some cases collective interviews were made (for instance to groups of young people or neighbours in Íntag), with two to five interviewees. In this case a dynamic discussion mode was adopted inviting participants to express and contrast their points of view.

Group interview in Junin, Íntag. (June 2010)

When agreed by the interviewee, interviews were digitally recorded and notes were taken signalling particular contents and possible follow up questions. Interviews also allowed identifying other relevant individuals or groups to interview. In general terms, interviews followed a saturation principle (Glassed and Strauss, 1967), in which interviews stopped when additional information obtained from interviews was redundant or not adding to previously collected data.

Workshops

Workshops were conducted in Íntag, to present the study objective and methodology, and to present and discuss preliminary results. There were two workshops where invitations were made to local organizations (with different positions regarding mining activities), local governments and other key actors. There was a participation of around 12 and 20 people. Transportation costs and the lunch of participants were covered by us. The workshops had a first stage of presentation of the multi-criteria project, its aims and methodology, and a second stage of discussion in groups. Workshops were used as participation stages to frame, adjust and discuss the development of the study. Smaller workshops were also conducted with the leaders of local organizations.

Workshops in Nangulví (October 2010, July 2010)

Direct observation and participant observation

Given the participation "exhaustion" of Íntag inhabitants that are regularly called to participate in regional assemblies and meetings, one of the key techniques used to complement (and triangulate) data regarding local needs and expectations was direct observation and participant observation. In Esquel participant observation approaches were used as outlined in the beginning of this section.

Direct observation refers to the collection of data while observing the daily life of Íntag inhabitants or observing and taking notes in public meetings. This was the approach used to observe large assemblies in Íntag where local inhabitants were discussing local needs and development initiatives.

In participant observation methods, researchers are not passive observers but can assume a variety of roles within a fieldwork situation, participating for instance in the actions being studied (Becker and Geer, 1957, Atkinson, *et al*., 2003, Yin, 2014). These methods offer the opportunity to perceive activists' viewpoints from "inside" and participate in domestic events (Yin, 2014).

Participation observation techniques were used in Esquel and Íntag. In Esquel, during fieldwork in 2006 I participated in assemblies and protests. In the case of Íntag, we participated with Sara Latorre in a wide range of local meetings, assemblies and activities. In some cases we contributed to pay for some transport and food costs of the participants of these events. We actively participated in meetings and discussion with local and national activists offering information and personal viewpoints.

Observation in Íntag regional planning assembly (Peñaherrera, May 2010)

Presentation of preliminary results in assemblies (Chontal, 2011, Peñaherrera 2013)

Data processing

Content analysis. Interviews were recorded (when agreed by the interviewee), transcribed and manually codified (Hepburn and Potter, 2005). In Esquel case, interviews were codified to research the key discourses and narratives used by different actors. A similar content analysis was conducted on documents collected such as in quotes of different actors present in newspaper articles and different documents produced by different actors in different moments of the conflict (leaflets, reports). This

allowed to fill in a chronological matrix to analyse the temporal evolution of perceptions.

In the social multi-criteria study, a content analysis was conducted to identify the main needs and expectations of different actors in Íntag.

Triangulation of sources. In the different researches presented in this thesis there has been a triangulation of data generated by different sources: interviews, participant observation, collected documents, Internet documents. This allowed to improve the quality of the research process, by identifying the strengths and weaknesses and qualities of different sources (Berg, 2009, Atkinson, Coffey and Delamont, 2003). Moreover, working with other colleagues allowed to conduct an "investigator triangulation" where different observers and interviewers allowed to balance out subjective influences of individuals (Flick, 2004). In Íntag research, we compared and discussed our –often differing- viewpoints on interviews with Sara Latorre. In the case of consultations, with Leire Urkidi we contrasted different interpretation of information, as each one of us was better acquainted with certain movements and countries.

Data sheets. In the consultation research, datasheets were used based on Gerber (2011) methodology to analyse 58 worldwide tree plantation conflicts. Datasheets were prepared for each case identifying the key sources of information and filling the following fields:

- the context in which consultations were conducted (characteristics of the place, date, and moment of the conflict).
- features of the mining project and company.
- the characteristics of the actors that promoted the consultation, their concerns/claims and supporters.
- the main characteristics of the consultation (formal/informal features, who votes/doesn't vote, how do they vote)
- the main outcomes and reactions of the consultations.
- evidence on the connections between cases of consultation.

The fields were filled crossing and comparing different sources of information and choosing the best quality information available.

Matrices. Different types of qualitative matrices were used in this thesis (Miles and Huberman, 1994). In the analysis of Esquel conflict, a chronological matrix was build identifying different events and actions related to different actors in the conflict. Another matrix allowed tracing the evolution of discourses by actor through time.

Secondary and primary sources were used to fill the matrix, however secondary sources were key as the memory of interviewees was highly subjective, and events were ordered not in chronological order but in terms of the relevance to them. This was however a source of information to the study. Interviews allowed to identify key turning points in the conflict. These different approaches contributed to the study of both the processes and moments in the development of the conflict (Johnston, 2002).

For the analysis of consultations in LA, matrices were used to compare different features of the consultations, their context, features of the proponents and supporters, their key claims, features of the mining company and project, claims and outcomes. These matrices were used to explore the main differences and commonalities among cases, structure discussion and refine the theoretical contribution.

Chapter 1. Esquel´s No a la mina (Argentina)

Source pictures: noalamina.org

Based on: Walter, M. and Martinez Alier, J., 2009. “How to Be Heard When Nobody Wants to Listen: Community Action against Mining in Argentina”. *Canadian Journal for development Studies* 29, 1-2: 281-201.

1. Introduction

In January 2004, the Argentine government launched the National Mining Plan, announcing that mining would become one of the foundations for the country's development. The announcement was made in a favourable international context for mining, when metals such as gold had reached record price levels. In addition, Argentina was a particularly favourable site for extractive activity, with an attractive tax system and a recently devalued currency that allowed gold mining projects to achieve outstanding rates of return, among the highest in the world and exceeded only by those of South Africa and Chile (Prado 2005). By 2004, Argentina ranked ninth among the top ten world destinations for mining investment (Bridge 2004b).

The government's announcement was made a decade after a legislative framework designed to promote mining had come into effect and as its results were becoming apparent. Between 2003 and 2007, the number of mining projects in the country increased from 40 to 336 (Bureau of Mining 2008), while the number of foreign mining companies grew from 7 to 55 between 1990 and 2004 (Prado 2005). International Financial Institutions (IFIs) supported the government's promotion of private investment, which was presented as the best means to strengthen the economy and stimulate development. This investment framework, moreover, was implemented jointly with strategic participative plans for local development that were meant to strengthen governance and to legitimize foreign investment.

The mining boom came at a critical moment for Argentina. In 2002, government statistics registered record unemployment (21.5%) and poverty rates (the income of 57% of the population was below the poverty line), and the economy experienced a strong recession, with an 11% reduction in GDP (EPH 2002). In this context, new mining projects were perceived as an opportunity to reactivate the economy and generate new sources of income for the public purse. However, while the national and provincial governments were celebrating the increasing number of projects and encouraging mining as the engine of national, provincial, and local development, various communities began to take action against mining. The emergence of grassroots movements around the country pressed municipalities and provinces to ban open-pit metal mining activities. From 2003 to 2008, 7 out of Argentina's 23 provinces approved such bans, challenging the national framework that aimed to promote mining.

The challenges posed by this effective local opposition raise a series of questions.

What motivated communities with high unemployment and poverty rates to oppose an activity that could potentially improve local economic conditions? Why have local groups acted to ban mining? The purpose of this article is to explore these issues through a case study of Esquel, the city in which anti-mining mobilization began in Argentina.

Esquel, a small city in the Patagonian Andes, was the site of the first public mining conflict of the twenty-first century in Argentina. It placed the discussion of mining— its environmental, social, and economic impacts, as well as the question of the right of local populations to choose their own development path—on the national political agenda. When Meridian Gold, an American corporation, arrived in Esquel with the intention of exploiting a gold and silver mine located seven kilometres from the city, a popular movement emerged to contest the agenda of the provincial government, which was perceived to have imposed the mining project in disregard of local development views. Official channels for participation proved ineffective at accommodating the community's vision of development, forcing residents to organize themselves to halt the initiative. The conflict was resolved (for the time being, since the gold remains underground) when a local plebiscite was held, in which 81% percent of the population voted against the mine. This experience also prompted the organization of a national network of communities affected by mining.

In a town where a quarter of the population was unemployed and 20% was poverty-stricken, what reasons lay behind the opposition to a project that could have stimulated local development? Was the conflict triggered by a poor communications strategy, as claimed by government representatives?

This article argues that behind the Esquel conflict, which exemplifies a growing number of mining conflicts, is a collision of two institutional frameworks for decision-making and of two different visions of the role of mining in local development. These different perspectives came to the fore when the local community in Esquel discovered that its points of view could not be accommodated by official channels for participation. In fact, official decision-making processes about mining provided no room for the values and visions of local actors; this, in turn, generated opposition and led to the community's mobilization.

Just before the arrival of Meridian Gold, Esquel was undergoing a process of great mobilization and participation. The need to review and rethink the foundations of the local economy and society in a time of crisis was reflected in several initiatives, such as

the design of a local development plan (fostered by the municipality of Esquel) and numerous other examples of mobilization that occurred during those years. The introduction of the mining project contravened the dynamics of local participation and leadership and represented a top-down process that attempted to impose an activity with significant local impact without properly involving or consulting with members of the local community.

After exploring some theoretical considerations and briefly explaining the research methodology, this paper will analyze the evolution of the conflict between proponents and opponents of a mining project in Esquel, Argentina, with reference to differing visions of development.

2. Environmentalism and Visions of Development

Environmentalists do not necessarily share a common vision of what development is or should be. While some question or oppose economic growth, others accept it under certain conditions and still others avoid taking a stand in the debate. These contradictory perspectives can emerge during environmental conflicts, not only through the discourses and actions of local protesters but also through their expressed perceptions of the motivations and interests of other actors.

Martinez-Alier (2002) has proposed that three main currents dominate contemporary environmentalism: the "cult of the wilderness," the "gospel of eco-efficiency," and the "environmentalism of the poor." These three approaches entail different outlooks on the relation between society and nature and the reasons behind environmental conflicts.

The "cult of the wilderness," or "deep ecology," is represented mainly by conservation movements established in the North that focus on the preservation of unspoiled wilderness and the restoration of degraded areas. This movement does not question economic growth as such but aims to preserve the remnants of pristine natural spaces outside the market. However, it must be noted that this current tends to neglect other issues on the environmental agenda (Guha and Martinez-Alier 1997, 93).

An example of this "cult of the wilderness" approach can be seen today in the Cordillera del Condor, in Ecuador, where rich deposits of copper and gold have been found. This region holds one of the most biodiverse and still poorly known ecosystems on earth and is home to indigenous communities and other local inhabitants who

consider their livelihoods at risk from the proposed mining activities. In this context, international and national conservation organizations have focused their efforts on negotiating with the government and the mining companies. In effect, the conservation organizations accepted the inevitability of mining in the region and advocated for the creation of protected sites outside claimed areas**.** This strategy created distrust and led to conflict with other environmentalists concerned about the long-term impact of mining on local livelihoods and watersheds in the Cordillera and about the unjust distribution of costs and benefits related to mining projects in the area.

The growth of the international conservation movement since the 1970s has been interpreted as part of a wider cultural shift. Ronald Inglehart associated this shift with the emergence of "post-materialist values" (1977, 1981, 1990), a thesis that by the end of the 1970s held hegemonic status in the political science and sociology literature (Guha and Martinez-Alier 1997; Brechin and Kempton 1994). "Post-materialism" refers to a shift in values that has taken place among the generations that reached adulthood in rich countries during the post–World War II era of affluence. According to this thesis, as these new generations had their material concerns satisfied (housing, food, etc.), they started to become concerned about other non-materialistic dimensions of life, such as the environment, the quality of life, sexual freedom, and human rights. This phenomenon would explain the formation during the 1970s and 1980s of European green parties and the emergence of the feminist, pacifist, and student movements. Furthermore, as post-materialist arguments reached widespread acceptance, different related theses emerged, such as the postulated positive relationship between income and environmental concern (Jones and Dunlap 1992; Albrecht 1995).

Nevertheless, since its formulation, the theoretical and methodological foundations of Inglehart´s thesis have been widely questioned. Particularly when its conclusions are extrapolated to poor nations, how can we explain concern for the environment when material needs remain unfulfilled (Brechin and Kempton 1994; Peet and Watts 1996; Dunlap and Merting 1997; Guha and Martinez-Alier 1997; Brechin 1999; Dunlap and York 2008)?

The "eco-efficiency" environmentalists are concerned with the sustainable management of the environment and human activity. This position is not opposed to economic growth but stands for a rational and efficient use of natural resources, which distances it from other sacred or aesthetic appreciations of nature (Martinez-Alier 2002). Some of the key phrases associated with this stance are "optimal allocation of

natural resources," "sustainable development," "ecological modernization," and "environmental services". Experts, scientific knowledge, and innovative research play a key role in "eco-efficiency" environmentalists' ideas about reducing the past, present, and future environmental impacts of economic growth.

This perspective is represented by the "Kuznets environmental curve" (KEC). The original Kuznets curve hypothesis, published in 1955 by the economist from whom it gets it name, suggested an inverted U relation between income distribution inequality and per capita income. In the early 1990s this work was recovered and applied to link income and environmental degradation. According to this hypothesis, when a country starts to grow, it first experiences increasing pressure on the environment (emission of pollutants, degradation of resources). Then, when growth reaches a certain level, these pressures decline as new technologies emerge, new regulations are crafted, and material pressures decrease.

According to this view, then, poorer countries need to grow economically in order to decrease their impact on the environment and improve their environmental health conditions. Nevertheless, case study research shows that such improvement has occurred only with regard to some specific pollutants. Other indicators of environmental pressures show inconsistent trends or, on the contrary, indicate that pollution levels tend to increase in affluent societies (e.g. greenhouse gas production, waste generation) (Dinda 2004; Roca *et al*., 2001; Stern 2004).

Moreover, Bridge and McManus (2000) explain how the emergence of social concern about the environmental impacts of forestry and mining in the United States has prompted a radical change in industry discourses. The adoption of "eco-efficiency" and "sustainability" discourses was central to relegitimizing business practices and facilitating extractive activities in the context of increasing social unrest and concern about the environment. By adopting the rhetoric of sustainable development, mining industries were able to co-opt the language of environmental protest, at once disenfranchising opposition and establishing themselves as authorities on and guardians of the protestors´ ideals (Bridge and McManus 2000, 38). From this perspective, "eco-efficiency" environmentalism can be interpreted as part of a business strategy that allows high-impact industries to reframe discursively their activities to make them more socially acceptable.

The "environmentalism of the poor" perspective, developed in the field of political ecology, regards environmental movements in poor countries or communities

as a defence of local livelihoods against the impacts and risks of economic growth. From this perspective, similar to that of the environmental justice movement in the United States, mobilizations emerge from diverse ecological conflicts that are produced by forms of economic growth that entail the extraction of resources and the production of waste. Since the environment is perceived as the direct basis of material sustenance by poor people, they protest resource extraction and pollution (Guha and Martinez-Alier 1997). This thesis does not deny the existence of a "post-materialist" environmentalism in northern societies, but it questions the perspective that the rich are more concerned about the environment than the poor, or that the poor are too poor to be "green" (Martinez-Alier 1995).

From this vantage point, environmental conflicts can be seen as disputes about territorial control (Sabatini 1997). The key to the problem would then lie in the relationship established between a community and its environment (Folchi 2001). To such communities, the environment is not a luxury asset, something superfluous, but rather is part of a complex social system in which physical, cultural, social, economic, and cognitive issues articulate a relationship singular to that place and historic moment (Norgaard 1984). As proposed by Arturo Escobar (2006), environmental conflicts can be conceptually understood through three interrelated rubrics: economy, ecology, and culture.

Such movements at times can express themselves in terms of "environmental justice," an idea that should not be understood as justice for the environment per se—as the conservation movement might do—but rather as a demand for the fair distribution of the costs and benefits of polluting activities, the recognition of difference, and/or procedural justice (Dobson 1998; Fraser 1998; Schlosberg 2007; Young 1990).

These three distinct and sometimes conflicting forms of environmentalism lead to different attitudes toward the role of experts, local knowledge and visions of development, and environmental management strategies. The first and the second forms of environmentalism entail a top-down management approach where expert knowledge defines a sustainable path, identifying and protecting the natural heritage and developing the technological solutions and economic instruments for sustainable growth. The third perspective, however, allows for the incorporation of diverse movements that advocate for a locally defined development path. Escobar emphasizes that "there are no grand alternatives that can be applied to all places or all situations ... One must resist formulation of alternatives at an abstract, macro level; one must also

resist the idea that the articulation of alternatives will take place in intellectual and academic circles" (1995, 222). This perspective clashes with top-down, imposed perspectives on development and legitimizes local knowledge and institutions in decision-making processes. Alternatives to development may be local to start with, but they may grow into regional or national proposals and policies. In some cases, as in the growing "climate justice" movements, the links between local and global issues are explicit.

To describe and analyze the conflict in Esquel—its actors and their visions of development—we draw on diverse sources of information. During the first stage of research, which took place in February 2003, we consulted documents, press releases, leaflets, posters, personal communications, newspaper articles, and personal notes from meetings and public events in Esquel. During a second stage in early 2006, we conducted 15 in-depth interviews with key actors and carried out a thorough analysis of local and national press sources between April 2002 and March 2003. A matrix in which actions and perceptions were entered chronologically and by type of actor became the framework for the investigation.

3. Esquel Case Study

a. Mining Frameworks, Environment, and Participation

In the 1980s, following a decade of political instability in Latin America, in an effort to promote economic growth and reduce the enormous foreign debt, governments in the region set in motion a reform process to liberalize the market. The mining sector was given a prominent role in this new model of economic development (Haselip and Hilson 2005). Supported by loans from the World Bank, governments passed new mining regulations introducing incentives and reducing taxes on private investment (Morgan 2002). Similar reforms were pursued during the 1980s and 1990s in approximately 90 countries, which triggered a redirection of investment flows towards new extracting areas, such as Latin America (Bridge 2004b). In fact, the Latin American region has experienced the most significant increases in mining development of any emerging market in the past 10 years (Haselip and Hilson 2005). In Argentina, this is reflected in the spectacular growth in mining investments, which, in the year 2002, when the Esquel conflict erupted, reached US$175 million and grew by a factor of eight in four years (CAEM 2008).

Since Law 24.196 on investment in mining was passed in 1993, various additional

regulations have broadened the range of incentives offered to mining projects. Examples include tax and exchange rate stability for 30 years, VAT refunds, and an exemption from various taxes on production, the import of machinery, and the export of minerals. However, all of this was not sufficient to regulate mining activity, since Argentina is a federal republic and provinces own their natural and mining resources. In contrast to other countries in the region, in Argentina the management of mining activities is decentralized (Sánchez Albavera, Ortiz, and Moussa 1999). Therefore, to unify mining policies throughout the country, in 1993 a federal mining agreement was signed between the provinces and the national government, limiting the application of local taxes and ratifying the benefits enshrined in national legislation. As a result, provinces may not set royalties that exceed 3% of the ex-mine price of mineral extracted, and municipalities may not charge taxes or stamp duties on mining activities.

Then, in 1995, an environmental protection act for mining activities (Law 24.585) was passed. Under this legislation, mining companies must submit an environmental impact assessment (EIA) before engaging in prospecting, exploration, extraction, or mine closure activities. No public participation is contemplated at any stage of the appraisal and approval procedure. In the province of Chubut, where our case study is situated, the provincial Bureau of Energy and Mining is responsible for assessing and approving EIAs.

During the 1990s, governments introduced another set of reforms aimed at improving participation and environmental protection. National and provincial constitutions and regulatory frameworks were updated, incorporating new rights for civic participation and environmental protection. These changes have had a direct impact on other areas of government, such as mining bureaus, which must now incorporate a public presentation of the EIA and ensure access to information on decision-making procedures. With the support of IFIs, this process also promotes the formulation of local development plans as a means to consolidate local governance and optimize the identification of projects for private investment.

b. Esquel's Participation-Related Experiences and Development Plan

Esquel is a small city located in the Patagonian province of Chubut, bordering the Andes mountain range, 1,900 kilometres from the Argentina's capital, Buenos Aires (Figure 8). It is the largest Andean settlement in the province, with 28,089 inhabitants. It has the most extensive infrastructure for transportation and services, and the best

educational facilities, in the region. The San Juan Bosco National University (UNSJB), the Agriculture and Forestry Experimental Centre of the National Institute for Agricultural Technology (INTA), and the Andes/Patagonian Forest Research Centre are all based in Esquel. Among other relevant organizations in the city are a local co-operative that manages water and power services, neighbourhood committees, and an indigenous movement that mobilizes around the demands of some of the Mapuche communities in the area.

Figure 8: Esquel location

Source: own elaboration, not included in the published paper.

Traditionally, economic activity in Esquel has been linked to its role as an administrative centre and to agricultural activity. Over the last few decades, tourism has grown, with attractions including fishing, mountaineering, a ski resort, and the nearby Los Alerces Nature Reserve, a protected area of lakes and forests that features larches

that are several thousand years old. In the 1980s and 1990s, these established economic activities were plunged into crisis. Unfavourable weather conditions and decreasing wool prices combined with public sector restructuring and budget cuts at both the national and provincial levels to paralyze the local economy (Esquel SEAS 2001). By the end of the 1990s, Esquel was confronting a social and economic crisis, with an unemployment rate of 25% and 20% of the population poverty-stricken (INDEC 2002).

In the midst of this crisis, a series of mobilizations and participatory experiences took place in Esquel that gave the community a leading role in setting the public agenda. One of these experiences was the development of a participatory local development plan. Beginning in 1997, several Patagonian municipalities and NGOs participated in workshops to learn about the characteristics and advantages of such planning processes, which were presented as tools for improving governance and as means by which to promote local development projects and investment.

In this context, the municipality of Esquel, in collaboration with a research group at the University of Esquel, initiated the design of a local development plan. The document was developed between December 1999 and July 2002, with Inter-American Development Bank funding (US$600,000). The "Participatory Plan for Local Development," or Esquel SEAS, as the document was called, aimed to create a "model for social, economic, and environmentally sustainable development" for Esquel (Esquel SEAS 2001).

Community organizations were called upon to participate in the elaboration of the plan. Workshops were held with neighborhood organizations (with an estimated participation of 150 people), and surveys were conducted. In the final proposal, which was presented in several community forums in Esquel in the course of 2002, five pillars of local development were highlighted: agriculture, forestry, tourism, knowledge industries, and mining. However, when interviewed, researchers in charge of the report pointed out that mining was added to the list only in the final stage of the process, because at that time the Cordon Esquel mining project was being promoted and local and provincial governments increasingly wished to include this emerging activity on the public agenda.

The level of participation and local empowerment generated by a series of mobilization and participation experiences that took place during these years should not be underestimated. In fact, in late 2001 and early 2002, four major social mobilizations occurred in Esquel related to growing social tensions and the economic crisis besetting

the province of Chubut and the city of Esquel.

First, by the end of 2001, the national government decided to cancel gas price subsidies for the province, which would trigger a sharp price increase. This provoked massive mobilization among the population of the entire province, which many residents remember to this day. Second, in early 2002, the Bank of the Province of Chubut filed for bankruptcy, and a significant citizen mobilization emerged to face the possible closure of the entity that administered the funds and salaries of a large percentage of the Esquel population. Third, beginning in 2001, an important movement of Independently Organized Teachers (Docentes Autoconvocados) was created and consolidated in the province of Chubut. They were organized as an assembly and played a leading role in several mobilizations, such as protests and strikes demanding that authorities improve labour conditions. During these years, neighbourhood assemblies and solution-seeking forums cropped up in various areas of the country to confront the deepening social and economic crisis. Finally, in early 2001, a "barter club" (*club de trueque*) was set up in Esquel, as in many other places in Argentina, and it remained active until 2002, with great local participation.

These multiple incidences of participation, characterized by public mobilization and the emergence of new local organizations, contributed to the development of new skills among a population that was trying to regain a leading role in political decision-making.

c. The Arrival of Mining in Esquel

The first news of the potential for mining in the area of Esquel became public in 1997. Deposits of gold, estimated at three million ounces, were found seven kilometres from Esquel, and the English junior mining company Brancote Holdings started exploration. In 2002, when gold prices in global markets reached historic highs, the US-based Meridian Gold (MG) purchased the mining project for US$270 million. The purchase was seen as a promising development since it was expected to reactivate the economy of the town and the province. During the following weeks, thousands of residents approached the mining company, offering their résumés in hopes of obtaining a job (*El Chubut*, Esquel City, 23 May 2002).

Along with the announcement of MG's arrival, the provincial government publicized the imminent submission of the Environmental Impact Assessment and the organization of a public hearing, stating that mining would start "at the beginning of the

following year" (*El Oeste*, Esquel City, 12 July 2002).[17] Figure 9 provides an economic and technical summary of the mining project when the EIA was unveiled two months later.

Figure 9: The Cordón Esquel Project

- The project was to generate a 4.6% increase in the GDP of the province, with annual revenue from mining royalties of approximately US$981,253 (3.9% of the revenue from provincial taxes). At a local level, it was expected to generate approximately 300 direct and 1,200 indirect jobs.
- The working life of the project was estimated at eight to nine years for the extraction phase, based on estimated total extractable reserves of over 3 million ounces of gold and a production rate of 300,000 ounces of gold a year.
- An open-pit mine was envisaged, with the possibility of expanding to a mixture of open-pit and underground mining in the future. The average ore grades in the deposits were approximately 10 g/t for gold and 17 g/t for silver.
- Production during the working life of the mine was calculated as approximately 12 million tons of mineral (gold and silver) and 130 million tons of waste rock, at a rate of 3,000 tons of mineral per day, using 180 tons of cyanide a month.
- The proposed method for extracting the gold and silver was by leaching with cyanide in a closed tank, with the construction of a slag heap for the tailings close to the mine that was to cover a total surface area of 10 km^2 for extraction and processing.

Source: Meridian Gold, 2002.

d. Initial Perceptions

In early 2002, when the confirmation of the mining project was imminent, the provincial government requested that a research group based at the San Juan Bosco National University, the same group that had drafted the local development plan, carry out a study of the mining project. With funds from the mining company, researchers prepared a report on local perceptions regarding the possible impact of the gold mining project (UATA 2002).

At this stage there was no detailed information available about the project, and the report could only assess perceptions, but its main conclusions identified some of the key

[17] Quotations from interviews, newspaper articles, and written documents were translated from Spanish to English by the authors.

elements of the conflict to come. The document highlighted six issues of concern to the community: (a) maximization of local employment; (b) adequate integration of mining into the local context of development; (c) forecasting social changes; (d) availability of reliable information; (e) minimization of environmental impact; and (f) the regulation of urban growth. With regard to the need to integrate mining with existing activities, concerns were raised about the possible interference of mining with ongoing agriculture, forestry, and tourism activities. Regarding social and urban changes, residents valued the then-current size of the city, as well as extant social relations and lifestyles; they also expressed concern about the social, cultural, demographic, and environmental transformations that mining might trigger (UATA 2002).

Interviews revealed that in 2002 there had been a general lack of local knowledge concerning the implications of open-pit mining. The initial image conjured up was of rudimentary mining, using no toxic substances. In the words of a local journalist who was interviewed, "It must be borne in mind that at this juncture the whole of Esquel knew absolutely nothing about what a mining scheme entails. I believe many of us saw mining as a pick, spade, and helmet with a light."

Local perceptions before the arrival of the mining project were also influenced by a then-recent experience that served as a backdrop to the community's initial views on the mining project: the construction of the Futaleufú hydroelectric dam. The project had engendered expectations that were never fulfilled of great improvements in living conditions and of low energy prices.

e. Informing the Community: Cyanide Risks

By mid-2002, the first details concerning the mining project, already presented to the national and provincial authorities, finally reached Esquel. To present the project to the local community, the supervisory authority for mining in the province, the provincial Mining Department, organized a series of talks. By then, some university lecturers from San Juan Bosco National University and organizations in Esquel had sounded the alarm about the centralized, non-participatory approach taken to presenting the project (Pizzolón 2003). However, concern escalated into open conflict following one particular event during the government's official communication campaign.

A talk on cyanide use by a representative of Du Pont, the future supplier of cyanide to Meridian Gold, motivated university experts in chemistry to get involved. Doubts about the quality and reliability of the information presented, combined with

mistrust about the way in which the information was disseminated by the Mining Department, prompted these academics to build alternative information channels that offered a different technical assessment of cyanide use and its related risks.

"[The government's information campaign] was a slap in the face for science, and for the people, because it was like saying 'I am telling you these things and you believe them because you are stupid'" (Chemistry lecturer from UNSJB, in an interview with the authors).

While the university lecturers were not experts in mining, they had the knowledge and resources to conduct their own independent analyses. So they gathered information from chemistry texts and the Internet, organized discussions in schools and institutions, circulated reports by email, and raised their profile by accepting the invitation of a local TV channel to present a public explanation of their reports that was then broadcast regularly. In this way, they cast doubt upon the alleged certainties of the official experts.

On October 15, 2002, the authorities announced the presentation of the EIA, to be followed one month later by a public hearing. Mining activities were scheduled to start at the beginning of 2003. In this context, a consensus was gradually built among the various organizations and civil society sectors on the need to obtain more information about the project, its potential impacts and risks, and on the need to create spaces for local public participation, where all doubts and concerns could be voiced and addressed.

f. Controversial EIA

The presentation of the EIA marked another turning point in the conflict. First, it was difficult to access the document. The company rejected the community's demand that it be distributed more widely, alleging that it contained industrial secrets. Second, other assessments began to emerge which indicated that the report was inadequate and contained inconsistencies. Nevertheless, the provincial government continued to support the project and kept to the original schedule for the public hearing and the commencement of mining activities.

In this context, various local, provincial, and national organizations requested a postponement of the public hearing, arguing that more time was needed to give the EIA due consideration. This request was rejected repeatedly by the provincial government based on the following argument, quoted in a local newspaper: "If the community wishes to analyse a specific point, a specialist may study and raise any particular issue in the report within no more than a week's time. For this reason, we consider the 60-day

time limit excessive" (*El Chubut*, Esquel City, 7 November 2002). This reasoning was based on the idea that the EIA was a technical document intended for specialists and not for members of the public, who would not readily understand its contents.

These events again raised questions about the transparency of the company's methods and about the government's role in monitoring the quality of the impact assessment and, more broadly, its credibility as a watchdog. In light of the haste to start operations and the lack of space for community participation, the project gradually came to be seen as an imposition from outside.

"Let us bear in mind that the environmental issue is just as important as the social and cultural issues. We are changing the face of our town forever. The decision taken must not be subject to time constraints and, even less so, to the sensitivities of a few civil servants ... The emphasis that government officials are placing on supporting this project is obvious, clear, blatant, and almost grotesque. Even more serious is the fact that many of them are the officials who are going to exercise "control" over the implementation of the project." (Reader's letter published in the newspaper *El Oeste*, Esquel City, 13 November 2002)

g. Neighborhood Assemblies

As more and more contradictory information circulated in the local community about the mining project—its impacts, risks, and benefits—and the public hearing was imminent, meetings were held to exchange views and hold discussions, first among groups of acquaintances, then in neighborhood assemblies. New communication technologies played a central role in the learning processes of the community. Email and the Internet were key tools, not only for finding and circulating information but also for building networks of contacts with movements in other parts of the country and the world.

The first assemblies convened informally toward the end of October in a local school where the Independently Organized Teachers (Docentes Autoconvocados) used to meet. This pressure group played a key role in the initial organizational arrangements, sharing, for instance, some basic guidelines on how to organize and moderate an assembly.

The first neighborhood meetings produced no consensus on the project or on mining in general. Above all, they functioned as a forum for exchanging information and concerns, and brought together highly divergent points of view. Some participants

wanted to gather information or to voice criticism, while others considered the project beneficial, provided that adequate controls were put in place (Pizzolón 2003; Zuoza 2005). In the course of the various meetings, data on mining activities, their precise nature, and previous experiences around the world were examined. "Concerns, comments, downloaded information from the Internet, newspaper cuttings, etc., were all brought together there. Everything served its purpose in a collective catharsis with the sole intention of chipping away at the unknown" (Pizzolón 2003, 152).

In mid-November, after a period of analysis and discussion, an assembly of 600 local citizens voted unanimously to adopt a position against the mining project and formed the Autonomous People's Assembly (Asemblea de Vecinos Autoconvocados, AVA)[18] with the slogan "No to the mine." This took place when the public hearing was imminent, the EIA was highly questioned, and the provincial government was ignoring repeated calls for postponement. In the AVA the idea that gained most ground was that the public hearing had been just a formality to lend legitimacy to a project that had already been approved. Beyond its heterogeneity, unlike other types of Esquel organizations, the AVA managed to become a forum of reflection for a broad cross-section of the local population critical of the project. In the months that followed, it led the way to building a movement opposed to the mine.

In the AVA the problems surrounding the project were defined and pieced together. At first, the principal concern centred on the risks posed by the use of cyanide and its impact on water resources (already scarce in the region). Later, dissemination of information and experiences from other communities in Latin America, such as Tambogrande in Peru (Muradian *et al.*, 2003), gave way to the emergence of new considerations regarding the project's impacts on the local community and the environment. Changes to the natural environment and new risks, such as accidents, pollution, and acid leaching, were added to the concerns about mining impacts, not only on the local populations but on their existing economic activities. At the same time, the news of numerous new mining projects in the region heightened concerns about the future of nature reserves and respect for the territorial rights of the Mapuche indigenous communities located in the vicinity of the deposits.

In this broad public debate, the fact that citizens had no chance to inject their concerns and differences of opinion into the decision-making process led them to adopt

[18] "Independently Organized or Self-Organized Assembly of Neighbours"

a more complex and political understanding of the project. This is illustrated by the motto "out with them all" (*que se vayan todos*) that was taken up by the local population during the activities and marches at the time of the plebiscite: a battle cry associated with the intense citizen mobilization of Argentina's 2001 national economic crisis, symbolizing loss of confidence in the political class. "It was a steady build-up. At first, it was limited to environmental aspects, then it moved on to what the government and the company were doing" (Member of AVA, in an interview with the authors).

Given the AVA's urgent need to express its opposition to the mining project publicly and to prevent a government-organized public hearing, the Assembly devised strategies to halt the project. At this stage, AVA was convinced that local visions of development were incompatible with large-scale mining. From the locals´ view development efforts should aim at the improvement of ongoing non-pollutant activities, such as agriculture and forestry, and the fostering of emerging ones, such as tourism. Concerns referring to the territorial transformations related to mining activities, previously identified by the university report, were also raised. A main demand of the AVA was not to compromise the social and environmental future of the city and the region.

AVA mobilization strategies also reflected the diversity of the movement, which brought together specialists—in chemistry, geography, medicine, journalism, law, and education—alongside members of the local population and spokespeople from the marginal sectors of the town's population. Some participants from poorer sectors of the city and others from more distant areas played a key role as intermediaries in bringing the information that was shared in the assemblies to their own neighborhoods. The circulation of a documentary on the impact of mining activities in Peru and a mercury spill in Choropampa (near Yanacocha in Cajamarca) were also crucial for illustrating the effects of gold mining in other communities in Latin America.

Lawyers, including one with previous experience in defending indigenous people's land rights, prepared an *acción de amparo*—an injunction against infringement of environmental rights—which led to the suspension of mining activities in February 2003. Preliminary municipal legislation was drawn up and a campaign was launched to pass the new municipal laws. The campaign also sought out the involvement of a number of national and international institutions and organizations that supported and disseminated the views of the local population, thus tilting the balance of power in the conflict.

The most symbolic activities were the street marches that, as time went on and participation by the local population increased, turned into a platform that allowed highly diverse sectors, which were not participating in the AVA but which were against the mining project, to express their views. With regard to the wide participation in the marches, one interviewee recalled extraordinary images such as "a Mapuche.... walking shoulder to shoulder with a rancher who ... had tried to evict his family" (Local journalist, in an interview with the authors).

The emergence of the AVA transformed the political landscape. By December 2002 more and more voices (of local and provincial experts) were heard, pointing out the flaws in the EIA submitted by Meridian Gold. In this climate, the provincial government reiterated its support for the mining project by expressing its confidence about the project's technical viability. Governor Lizurume was quoted in *El Oeste* on November 26: "As long as we think that there is no risk, there is nothing to stop the investment from going ahead." The influence of the local movement was downplayed and associated with radical conservation movements (usually linked to the influence of international NGOs), irrationality, or political motives. On another occasion the governor said, "The project is in progress and nothing will get in its way, unless technical considerations, such as the environmental impact report, make it advisable to slow down" (*El Oeste*, Esquel City, 10 November 2002). The government's key argument was that there was a technical rationale for the project, beyond the comprehension of non-experts.

The official argument assumed that if the non-specialists (including university teachers) had better information, they would reach the same conclusions as the experts. This official reasoning downgraded the public role of non-experts, who were considered ignorant about what was at stake, to being merely recipients of information about their decisions, one of the lowest rungs on the eight-rung ladder of participation proposed by Arnstein (1969). This attitude, in turn, created feelings of frustration and injustice among the sectors excluded from the decision-making process and heightened the climate of mistrust.

h. The Local Plebiscite

In an atmosphere of mounting tension within the local community, the municipal Deliberative Council finally approved, in the beginning of February, three municipal orders proposed by the AVA:

1. a ban on the use of cyanide in the territory of Esquel (subsequently rescinded by the mayor on the grounds that it possibly clashed with national law);

2. a municipal derogation of national and provincial mining laws on the grounds that they "are harmful to the tourist profile and the interests of the local community"; and

3. the announcement of a public referendum on the mining project, thus giving a new twist to the decision-making process (as in the Tambogrande case in Peru).

The approval of these municipal orders, particularly the call for a public vote in favour of or against the mine on March 23, for various reasons brought about a change in the dynamics of the conflict.

First, the referendum thrust local public opinion to the centre of the political stage; until that point, it had been marginalized in the official decision-making process. The laws passed by the municipality bear witness to efforts to create a forum for expressing local interests and values that give greater weight to local democracy than to other decision-making criteria such as economic growth or national interests.

In addition, the mayor of Esquel, who until then had aligned himself with the provincial government in support of the project, changed his tune and stated: "Although not binding, the plebiscite will place a moral obligation on this municipality that we can neither escape nor hide from. For this reason, we will respect fully the will of the people of Esquel" (*El Chubut*, Esquel City, 4 March 2003).

Finally, the call for a referendum polarized the sectors concerned, either in favour of or against the project. The spotlight moved from the environmental organizations and the government and onto the 20,000 people of Esquel who were about to vote. At the same time, the referendum made the Esquel conflict more visible nationally and internationally.

On March 23, the plebiscite was duly held with a turnout of 75% of the 20,000 eligible voters. The result was that 81% said "No to the mine." In the days that followed, the company and the provincial government announced that they were halting the mining activities, the municipal Deliberative Council approved the ban in Esquel on mining that uses cyanide, and the provincial legislature approved a ban on open-pit mining. These bans, along with the political difficulty of moving the project forward, nevertheless represent only a partial closure of the mining project, since the project has subsequently been sold to the Canadian company Yamana Gold which, in spite of local resistance and bans, hopes to advance the project in the future.

Even so, the Esquel plebiscite had national consequences. In November 2003, representatives of communities from six provinces in Argentina, all opposed to mining projects in their respective areas, met in Buenos Aires and set up the National Network of Communities Affected by Mining. Its objective is to "coordinate the struggle against the ransacking and ecocide on our doorsteps that is condoned by the current mining legislation." The network identified the root causes of mining conflicts to be the laws that grant disproportionate advantages to private investment in mining over and above the right to participation and decision-making at local levels. In the months that followed, new neighborhood movements sprang up in different parts of the country. These movements successfully obtained bans on open-pit mining that uses toxic substances in seven provinces of the country: Chubut (2003), Río Negro (2005), Tucumán (2007), Mendoza (2007), La Pampa (2007), Córdoba (2008), and San Luis (2008).

4. Opposing Views on Development

While analyzing the conflict in Esquel, the conflict revolved largely around two opposing views on mining and development.

On the one hand, there was a coalition that incorporated the provincial and municipal governments (though towards the end of the conflict, the latter changed its position), the local chamber of commerce, and the construction workers' union, which saw mining as a beneficial activity if adequate technologies and controls were set up. This group did not dismiss environmental concerns altogether, but it displayed confidence in the EIA and related expert opinion, reflecting an eco-efficiency perspective that views economic growth as a necessary step towards sustainable development; environmental concerns were taken into consideration only through expert opinion and technological mitigation measures. Hence, it was a position in which sustainability is defined by experts who supposedly have the ability and knowledge to assess the possible impacts and risks while providing cost-effective adequate solutions. This group also was convinced that mining activities were compatible with ongoing activities, and that they would offer new opportunities for local development, generating jobs and incomes and thus improving livelihoods in the community. According to this group, criticism related to environmental uncertainty and questions regarding compatibility with local development views were alarmist and ignorant and often motivated by an "environmentalism of the rich" perspective imported from abroad by conservation organizations.

On the other hand, various sectors of the Esquel community were incorporated into the AVA: the water co-operative, a small businesses group (split from the chamber of commerce), Mapuche indigenous organizations, and regional NGOs among them. The scope of this coalition was reflected in the result of the plebiscite, which demonstrated that poverty-stricken and unemployed residents also opposed mining.

Although it would not be accurate to affirm that all residents opposed the Cordon Esquel mining project, they certainly did not agree with the way the project was introduced into the community. From the day of the first official announcement, the provincial government and mining bureau simply assumed that the project would go ahead and announced a schedule and anticipated production figures. This attitude rankled a community that was mobilizing around and deliberating upon local development issues that had not been taken into account.

Throughout the conflict, local actors came to more explicitly embrace and celebrate certain values in relation to local development. An appreciation for participatory democracy had begun to form during previous participative experiences and was consolidated through the experience of the mining conflict. Second, local actors asserted a heightened level of appreciation for the environment, not only as a source of potable water in a region where water is scarce, but also as an inseparable part of the city's economy and the mode of life of its residents. Traditional activities like agriculture and forestry, and emerging activities such as tourism, were deemed valuable and considered to be environmentally and socially sustainable. Esquel's residents also deemed the small size and quiet lifestyle of the city to be valuable.

As neighbors began to gather information about open-pit mining—its short lifespan, its environmental impact, the attendant social and urban changes, and its generation and distribution of profits—the idea that this activity was not compatible with their vision of local development consolidated. It is worth highlighting the fact that the region already had experience with another large project: the construction of a dam that never affected the level of economic growth or development in the way promised by those who had promoted it. This precedent generated a sense of "reasoned distrust" that was not taken into account by those supporting the mining project when making their own promises about positive outcomes.

The experience in Esquel reflected the fact that the community held and was willing to defend its own vision for long-term local development. Even in a context of pressing crisis, the community chose strong, long-term sustainability over a project of

uncertain environmental sustainability that privileged pecuniary income in the short-run (Pearce and Atkinson 1993). This is an example of an action stemming from the "environmentalism of the poor."

5. Decision-Making Processes: Exclusion and Participation

The Esquel case also raises questions about the ways in which decisions about large investments are made, investments that have important implications at the local level. In this case, there were two opposite approaches: the formal, top-down process implemented by the authorities under the umbrella of the new mining legislation, and the informal bottom-up process led by the AVA and supported by the institutional tools available to local actors for expressing their views (e.g. participation laws, plebiscite).

According to Vatn (2005), decision-making structures are value-articulating institutions that determine the values that can be expressed, the way in which they can be expressed, and, ultimately, the preferable choices. In other words, they establish procedures that frame the debate and that influence what will be negotiated, thereby skewing the outcome. An analysis of the official decision-making procedure in the Esquel case, its underlying values and preferences, allows us better to understand why local unrest increased and why an alternative decision-making space emerged, led by the AVA. The comparison between these two value-articulating institutions underlines how limited official decision-making processes are when it comes to accommodating local perspectives.

The government and the company responded to growing concerns about the project by avoiding public debate; they claimed that the issues were reserved for the experts, limiting public involvement in the formal assessment and approval process (Shepherd and Bowler 1997). To express their points of view, residents created an independent, inclusive, and critical space for deliberation, the Autonomous People's Assembly (AVA, Asemblea de Vecinos Autoconvocados).

The way in which the AVA was organized demonstrates the need for a different approach to the evaluation of extractive projects, with regard to both the shape and the content of the evaluative process. As far as content is concerned, in the framework of the AVA, different valuation languages are considered legitimate (environmental, cultural, social, indigenous, economic, ethical, and democratic) while the EIA was based only on technical responses to variables that had been pre-selected before the document was written. Therefore, the officially organized public hearing, designed to

facilitate deliberation on the EIA, had a structural limitation because it was based on the restricted terms of reference of the document itself. This made it impossible to express certain "intangible" issues that were at stake (social identities, power networks, belief systems) (Suryanata and Umemoto 2005). The perceived lack of opportunity for participation via official channels led the AVA to boycott the event.

As far as shape is concerned, the Assembly is by definition a local and horizontal space for deliberation, while the EIA was a technical report written by experts in accordance with a procedure designed to be objective, impartial, and unbiased (Weston 2000) -- assumed qualities that have all been seriously questioned (Owens *et al*., 2004, Jay *et al*., 2007, Persson 2006). Regarding jurisdiction, the EIA's position was that the province should have the final word. The AVA arose specifically to champion the importance of local-level actors in the decision-making process.

Therefore, due to the structural limitations of the official decision-making process— with regard to its ability to incorporate different interests, values, and visions of development, as well as its ability to channel growing mobilization at the local level—the community was left with no choice but to oppose mining activities, pushing for a ban that would disarm the provincial government's agenda.

Finally, the Esquel case demonstrates that a decision-making process that acknowledges social learning dynamics requires a change in governance style, towards one based on greater collaboration. Such a decision-making framework also implies a different role for information, as a means to support communication, rather than as the sole domain of experts. This, in turn, recalls and reinforces the insight that management should not be understood as a process requiring the identification of optimal solutions in a predictable environment; instead, it should be seen as a process requiring many instances of learning in a rapidly changing world (Pahl-Wostl *et al*., 2007).

Chapter 2. Community metal mining *consultas* in Latin America

Sources: www.noalamina.org.

Based on: Walter M. and Urkidi, L., "Community metal mining consultas in Latin America (2002-2012). A glocal participation institution." Under review in *Geoforum* since February 2014.

1. Introduction

On the first Sunday of June 2002, 75% of the eligible voters of the Peruvian district of Tambogrande issued their secret vote in the first municipal consultation on a mining project held in Latin America; 94% of voters rejected the exploitation of a large-scale open-pit gold mine. From Tambogrande in 2002 to Mataquescuintla (Guatemala) in November 2012, 68 consultations/referenda have been conducted in 5 Latin American (LA) countries. In all cases, the result has been a large opposition to mining projects, contributing in some places to the cancelation of projects. These are not consultations fostered and regulated by national governments or mining companies as part of official procedures, but are promoted by Environmental Justice movements opposing mining projects.

Since the 1990s, metal mining investment have gradually increased in Latin America (LA), becoming in the 2000s the main targeted region of the World (de Echave *et al*., 2009, Ericsson and Larsson, 2013). Material extraction and material exports in LA have multiplied by a factor of three to four in the last forty years (West and Schandl, 2013). However, as the extraction frontier (Moore, 2000) advances toward new deposits with lower ore concentrations, the environmental, economic, and social damages of extraction increase (Prior *et al*., 2012).

As raw materials extraction pressures grow in LA, there is an increase of related conflicts (Martinez Alier *et al*., 2010, Muradian *et al*., 2012, Urkidi and Walter, 2011, Svampa and Antonelli, 2009) The Latin American Observatory of Mining Conflicts (OCMAL) accounted in late 2013 for 196 ongoing mining conflicts affecting 295 communities in Latin America. Peru (34), Chile (33), Argentina (26), Brazil (20), Mexico (28), Colombia (12), Bolivia (9) and Ecuador (7) have the highest number of mining conflicts (OCMAL, 2013). Furthermore, reports issued by international and national organizations are exposing the increased number of activists killed, prosecuted or harassed by the police, the army or paramilitary or other hooded men, or subjected to psychological intimidation (OCMAL 2011, Red Muqui, 2009; Castagnino, 2006, Saavedra, 2013, Toledo *et al*., 2013).

In this context of escalation of mining disputes, cases of community consultations have multiplied. However, the emergence and spread of consultations in LA remains poorly studied and raises relevant questions**.** Studies addressing mining consultations/referenda have focused on the first four cases: Tambogrande, Esquel,

Sipakapa and Majaz/Río Blanco (Muradian *et al*., 2003, De Echave *et al*., 2009, Haarstad and Floysand, 2007, Walter and Martinez Alier, 2010, Urkidi, 2011b, Fulmer, 2011, McGee, 2009, Bebbington 2012a, Subies *et al*., 2005) and the Guatemalan national wave of consultations (Holden and Jacobson, 2008, Trentavizi and Cahuec, 2012, Rasch, 2012). Nevertheless, the cases that followed, and the connections among consultations have received poor scholarly attention. The authors of this paper were among the researchers that analysed the initial cases of consultation and have since then seen how year after year the number of communities participating in almost identical experiences increased. This research is born from the curiosity of understanding how and why these consultations have emerged and spread and how community consultations are challenging the hegemonic scales governing mining activities.

2. A Political Ecology of Scale

This paper studies the process of mining consultation in LA, analyzing its institutional characteristics, scalar politics and Environmental Justice (EJ) dimensions. LA anti-mining movements have been framed as Environmental Justice Movements (EJMs), as they demand socio-ecological equity and fair decision-making processes in the governance of mining activities (Urkidi and Walter, 2011). Recently, questions of participation and voice have been at the forefront of EJ studies (Schlosberg, 2007). The concept of EJ was born in the 1980s alongside Afro-American social movements in the US fighting environmental racism (Bullard, 1993). The concept has since then travelled among social movements and has been appropriated by other social groups and movements in the world. In this vein, national and regional environmental justice networks have emerged in LA and elsewhere in the last decades (Carruthers, 2008). Mining concerns and anti-mining movements have a central place in these LA networks.

The field of political ecology has contributed to a great extent to the study of EJM, analyzing the power asymmetries, unequal distribution trends and environmental discourses in the context of socio-ecological conflicts (Martinez Alier, 2002). Since Blaikie and Brookfield's (1987) foundational work, the relevance of addressing scales has transversed the field (Neumann 2009, Paulson *et al*., 2003). Moreover, there is an expanding field of research led by political geographers addressing EJMs' politics of scale (Towers, 2000; Kurtz, 2003; Williams, 1999, Sze *et al*., 2009). This paper grows

from these two interrelated research fields that offer rich cross-fertilization opportunities (Robbins 2008, Neumann 2009).

2.1. EJ Scale struggles

In their analysis of the way scale has been tackled in contentious politics, Leitner *et al*. (2008) conceptualize scale "as a relational, power-laden and contested construction that actors strategically engage with, in order to legitimise or challenge existing power relations" (p159). Hence, the mobilization of scalar narratives and scalar practices belong to the struggles and strategies for political power (Swyngedouw, 2004). In this vein, EJ struggles can be seen as struggles over the construction, reconstruction and power reconfiguration of scales and scale relations.

Some political geographers expressed criticism regarding EJMs' "militant particularism" (Harvey, 1996), according to which movements have to find a way to cross the problematic divide between actions that are profoundly embedded in place and local experience and a wider movement. According to this perspective, local loyalties and identity politics of resistance movements prevent from engaging in wider and emancipating politics of scale (Swyngedouw, 2004). However, this is not a fair picture of the EJMs, as these tend to transcend place-based militant particularism, building challenging scalar narratives and transnational networks (Kurtz 2003, Pellow, 2007, Carmin and Agyeman, 2011, Urkidi and Walter 2011). Moreover, EJMs should not be seen as static, but learning and flexible movements that expand and contract in space as conflicts unfold and movements jump scales.

The role of scale jumping (Smith, 1993) has been examined in a wide range of social movements, such as the environmental justice, peasant, indigenous, or labour unions (Perreault 2003, Urkidi 2010). Scale jumping enables the access to (and formation of) transnational advocacy networks (Keck and Sikkink, 1998), where activists meet, exchange, learn and construct their social capital changing the way they frame their political claims and negotiate with State and private actors (Perreault, 2003). Researches in LA anti-mining movements also explain how multi-scalar networking and advocacy strategies influence the reframing of EJ narratives (Haarstad and Floysand, 2007, Urkidi and Walter, 2011).

However, it has also been claimed that one should be careful while considering the relation between empowerment and jumping scales. Power is not embedded in certain scales but is a relational effect of social interaction that is spatially mediated

(Allen 2003, Haarstad and Floysand, 2007). In this vein, scale jumping does not imply that "upper" scales entail more power that "lower" ones. Instead, jumping scales can be both horizontal and vertical (Swyngedouw, 1997); sometimes empowerment can come from having local struggles based on powerful ideas such as local democracy or indigenous territorial rights (Escobar, 2001).

2.2. Scales of meaning and regulation

Based on Neil Brenner's and Henri Lefebvre's analysis, Towers (2000) distinguishes two scalar types of contents: meaning and regulation. Scale of *meaning* refers to the values and meanings that are embedded in the construction of scales. Environmental justice activists tend to invoke geographical scales to negotiate the meaning and extent of environmental injustices (Williams, 1999; Towers, 2000; Kurtz, 2003). Anti-mining movements in Latin-America directly appeal to spatial inequalities in relation to mining. They emphasize that while ecological damages are suffered in the local scale, the economic benefits of mining are appropriated by transnational actors or the State.

EJMs' claims usually address three key dimensions of environmental justice: distribution, recognition and participation (Schlosberg 2007). These can be seen as key lenses through which EJM frame and contest scales. EJM do not only complain about environmental inequities but also, and sometimes centrally, about the political processes that construct them. Anti-mining groups in LA frequently argue that the approval of mining projects involves the misrecognition of the material and cultural dependence on water and land of the affected populations and that it ignores the concerns expressed in local participatory stages (Haarstad and Floysand, 2007; Muradian *et al*., 2003; Urkidi, 2010, Bebbington *et al*., 2008). The definition of the problem and possible solutions in environmental justice conflicts is permeated by scalar politics (Kurtz, 2003; Williams, 1999).

Scales of *regulation* "define landscapes administered by distinct decision-making bodies" (Towers, 2000:26). This sheds light on the overlapping decision-making and regulatory bodies that guide the administration of scale by the state and private entities. States organize and administer space producing regulation scales. However, States are not coherent, monolithic or stable entities in space and time (Robbins, 2008). States build complex constellations of scales of regulations that are both a source of restriction and opportunity for EJM. Private mining companies are also

organized spatially, while a company can be based in Canada or Australia, subsidiaries are created at the different countries they operate, producing different scales of regulation.

The hegemonic scales of regulation steering mining activities are shared by most LA countries. Indeed, LA mining laws were developed under similar guidelines (Bridge 2004, Chaparro, 2002). The approval of mining projects is usually centralized in the national government, and is based on the assessment of an Environmental Impact report. Participation arenas are set in relation to this technical document. Civil society actors can usually present allegations (e.g. online, in paper) and, sometimes, can express their views in a public audience where the technical document is presented and discussed. However, EJM claim that participation in mining decisions is mainly "informative" and insufficient, when not secretive (Jahncke and Meza, 2010).

Projects affecting indigenous communities are under specific regulations. Most LA countries –all countries studied in this paper- have subscribed the 169 International Labour Organization (ILO) Convention that requires prior and informed consent of communities before decisions and activities that could affect them, a process that should follow customary procedures. This right is usually ignored or miss-applied (Jahncke and Meza, 2010). However, even if put in practice, the way the ILO 169 and other international documents (e.g. UN declaration on the Rights of Indigenous People) frame "consent" is ambiguous and does not necessarily implies that binding power be given to community views (McGee, 2009, Jahncke and Meza, 2010).

When communities contest social change at the scales of regulation and meaning they identify as favourable, a politics of scale is triggered (Towers, 2000). The ability of EJMs to strategically invoke environmental justice scales of meaning has been pointed as a key strategy to influence regulatory criteria at different scales of regulation (Towers, 2000). The success of EJM has been related to their capacity to adjust the scale of meaning with the appropriated scale of regulation (Bickerstaff and Agyemann, 2009). In a similar vein, Kurtz (2003:894) proposes "scales frames" as "the discursive practices that construct meaningful (and actionable) linkages between the scale at which a social problem is experienced and the scale(s) at which it could be politically addressed or resolved". While these studies highlight the discursive power of EJMs' scalar claims, with which we agree, we sustain that EJMs can also have a central role in the production of scales of regulation.

2.3. Environmental governance and hybrid institutions

We would like to problematize the way scales of regulation are conceptualized and disputed, in particular in the field of environmental regulation and considering the role of EJMs. There is an ongoing shift in views that frame resource regulation as led by State-based institutions of resource management (government) to an environmental governance perspective. The governance approach addresses the myriad of actors and institutions that guide the ways in which (global) environmental issues are addressed across different scales (Bulkeley, 2005). State-centred frames are increasingly unsatisfactory and anachronistic to understand new ways in which scales of regulation are constructed and reconstructed (Bakker and Bridge, 2008). Recognizing the new spatial grammars at play becomes necessary to understand emerging hybrid forms of environmental governance and their implications (Bulkeley, 2005). While we agree that these emerging mechanisms can be sometimes a source of disempowerment (Swyngedouw *et al*., 2002), we claim that it can also be a source of opportunities to reshape the role of civil society and gain leverage in political struggle and the construction of scales of regulation.

We understand environmental governance as the "set of regulatory processes, mechanisms and organizations through which political actors influence environmental actions and outcomes. Governance comprises the actions of the state and includes actors such as communities, companies and NGOs. The forms of environmental governance reflect the different political-economic relationships that institutions embody and how these relationships shape identities, actions and outcomes" (Lemos and Argawal 2006: 299).

The emergence of new forms of governance, such as hybrid institutions, challenges the conventionally recognized social roles of markets, states and, more recently, communities, and new dynamics and alliances are formed. Examples of these hybrid institutions are Corporate Social Responsibility (CSR), voluntary agreements between companies and communities or forestry co-management experiences between the state and communities. Hybrid forms of environmental governance combine the weaknesses and strengths of different agents, recognizing that single agents do not have the capabilities to address the multiple facets, interdependencies, and scales of environmental problems (Lemos and Argawal, 2006). These new forms of governance entail the formation of new political spaces with complex spatialities: networks of

social, economic and cultural relations, actors connecting from distant locations, sharing networks with common social and political objectives (Marden 1997:41).

Some scholars point out that such apparently new mechanisms of (hybrid) governance, are merely an evolution of traditional regime politics where excluded and disempowered groups still have little participation opportunities despite the apparently larger integration of civil society actors (Ford, 2003, Swyngedouw *et al*., 2002, Swyngedouw, 2005). Recent studies analysing the role of CSR practices in the mining sector reach similar conclusions (Warnaars, 2012). However, some suggest that a possible exception could be the "governance from below" fostered by social movements that challenge corporatate and private interest, but these are, nevertheless, under the risk of cooptation (Paterson, Humphreys and Petiford, 2003). Whereas civil society organizations once devoted their energy largely to efforts aimed at influencing the actions of governments, now they direct substantial resources to promote governance that bypasses governments (Young and Lemos, 2009). As the confidence of civil society in the ability of governments to meet their demand for governance for sustainable development wanes, the lure of new forms of governance rises (Delmas and Young, 2009).

In this paper, we analyze the process of emergence and spread of EJMs led community consultations, exploring how and to what extent this institution is challenging the hegemonic scales of meaning and regulation governing mining activities in Latin America. Building on the growing literature on EJM scalar struggles, we explore the role of EJMs in the construction of scales. We claim that the process of emergence and spread of consultations can be seen as the emergence of a glocal environmental governance institution that constructs a new scale of regulation: local participation via referendum/consultation.

In this vein, this research addresses not only an empirically relevant and understudied process (i.e. community consultations in LA), but also offers insights on a theoretically relevant matter. As highlighted by Brenner (2001, 608): "The specification of the particular historical-geographical conditions under which scalar hierarchies may become stakes rather than mere settings of social struggle is a theoretical and empirical task that awaits more systematic investigation." Community consultations present a valuable and singular case of struggle over the hegemony of scales.

3. Sources and Methods

In order to study the process of emergence and spread of LA mining consultations, the authors of this paper identified and analysed all cases of metal-mining consultation/referenda fostered by EJMs from 2002 (Tambogrande) to 2012 in LA. We considered those consultation/referenda that: a) were not fostered by the central government or private companies as part of an official consultation process, b) were aimed at consulting the local citizens at large whether a community/municipality/district was in favour or against large scale metal mining activities in their territory, c) were not made as an internal participation procedure that was not communicated outside its participants.

We analysed for each case: a) the mining regulations in dispute and the regulations used to support consultations/referenda, b) the context in which consultations were conducted (characteristics of the place, date, and moment of the conflict), c) the characteristics and scalar features of the actors that promoted or impeded consultations, their supporters and claims, d) the consultation main characteristics (formal/informal features, who votes/doesn't vote, how do they vote) and their main outcomes and reactions, and e) the spatial connections between cases.

The first and second steps were conducted reviewing and triangulating primary and secondary, activist and academic sources. Our methodology is based on Gerber (2011) multiple case analysis (58) of conflicts over industrial tree plantations in the South. We conducted a review of the main newspapers for each LA country. International and LA activist networks and websites on mining conflicts were a key source of information as these networks reach a wide range of social movements in the region that don´t always get media (or scholarly) attention (e.g. www.conflictosmineros.net, www.noalamina.org, www.minesandcommunities.org). These networks have been increasingly recognized as relevant for research, not only as a source of valuable activist knowledge (Rocheleau *et al*., 1996; Escobar, 2008, Gerber 2011, Martinez Alier *et al*., 2011), but also for the development of extractive industries research in LA (Bebbington, 2012b). We also reviewed activists' and scholars' analyses of mining conflicts, as well as documentaries addressing our case studies.

Primary sources were also used. The authors of this paper had previously carried out extensive field work in two main consultation cases (Esquel and Sipakapa) and in other mining conflicts in Argentina, Chile, Ecuador and Bolivia. When required to fill

blanks or contrast the quality of information, activists and scholars were interviewed. Sources were compiled and compared, identifying and choosing the best quality information available. As the analysis unfolded, we identified main commonalities and differences and developed a series of hypotheses for the emergence and spread of consultations that made us revisit and expand our sources: an iterative process that led to us to refine the findings outlined in this paper.

4. The rise and spread of mining consultations in Latin America

We identified 68 metal mining consultations in 5 LA countries: Peru (2002, 2007, 2008, 2009, 2012), Argentina (2003, 2012), Ecuador (2011), Colombia (2009) and Guatemala (57 municipal consultations from Sipakapa in 2005 to Mataquescuintla in 2012). We grouped cases according to their connections and similarities, not their chronological order. We present three main "travel paths" focusing on their central cases, referring to the key characteristics of the contexts of emergence, the institutional features and outcomes/reactions of the consultation/referenda and the EJMs involved.

The first travel path, presents the main features of the first consultation case in Tambogrande (2002), the spread of the experience to other Peruvian communities and its arrival to Ecuador. The second travel path, addresses the Guatemalan wave of consultations born from Sipakapa (2005) and the arrival of this experience to Colombia. The third travel path outlines the key features of the Argentinean process triggered by Esquel (2003). We acknowledge that as consultations/referenda experiences become widely known these paths are crossing, hybridizing models and experiences, nevertheless at this initial stage, differentiating travel paths allows to recognize some key spatial dynamics.

4.1. Peru and Ecuador

4.1.1. Tambogrande conflict (Piura)

Peru has a long history of mining activities and environmental justice-related conflicts (La Oroya, Cerro de Pasco, Ilo, Huarmey, Yanacocha, Tintaya), including cases of heavy pollution and human intoxication by accidents (Muradian *et al*., 2003). These conflicts led to the formation in 1999 of the CONACAMI, a National Coordinating Confederation of Communities Affected by Mining, a key Peruvian and

Latin American organization that has strengthened through referenda and played a key role spreading these experiences (Conacami, 2013).

Tambogrande is located in one of the poorest departments of Peru (Piura), with an arid climate that requires dams and irrigation canals (built with World Bank support) to sustain its agricultural export-oriented activities. The conflict was triggered by Manhattan Minerals Corp (Canadian junior mining company) open pit gold and silver mining project, whose main deposit was located under Tambogrande town. Critical voices pointing to the environmental and social impacts of this activity, led by a local farmer and agrarian engineer immigrated from Lima, fostered the formation of the *Frente de Defensa de Tambogrande y el Valle de San Lorenzo* in 1999. This organization became the main local opposition to the project in collaboration with the local Church and CONACAMI, the National Coordinating Confederation of Communities Affected by Mining (Portugal Mendoza, 2005).

As the *Frente* was unable to engage in an exchange of views and concerns with the national government, local unrest rose (Portugal Mendoza, 2005). In March 2001, a month after a period of strikes, massive mobilisations and violent events in Tambogrande, the local leader Godofredo García Baca was shot dead by a hooded gunman (Muradian *et al*., 2003, Subies *et al*., 2005). These events made the mining conflict national and internationally known (The Economist, 23 June 2001) engaging new national and international supports. Professionals from Piura and Lima constituted a working group to elaborate technical arguments and reports against the project, succeeding to involve trans-national organizations and networks in the local struggle (Muradian *et al*., 2003, Bebbington *et al*., 2011, Subies *et al*., 2005).

However, local frustration and tension were mounting, triggering the concerns of social movements with a possible escalation of violence (Portugal Mendoza, 2005, McGee, 2008, Cabellos and Boyd, 2007). In this context, the *Frente* and its allies (Church, technical advisory groups, NGOs) and Tambogrande major –who was not clearly positioned before- agreed on the need to conduct a *consulta vecinal* (neighbours' consultation), a peaceful and democratic alternative to channel local unrest and express local views (Pedro Mendoza, 2005, Bebbington *et al*., 2011, Subies *et al*., 2005).

The Municipality of Tambogrande issued the Municipal Ordinance Nº 012-2001-MDT-C that created the *consulta vecinal* (neighbours' consultation) as a mechanism for citizenship participation at the district level. The Ordinance was based on international, national and municipal rights and laws on citizen participation (international treaties,

national and municipal laws, constitutional articles, the Environment Code), setting the basic legal structure that would be later used in all following consultations in Peru. While the ILO 169 was not referred in Tambogrande consultation ordinance -it was added in the following Majaz/Río Blanco municipal ordinances- it was used in activist discourses (Fulmer, 2011).

The National Office of Electoral Processes initially recognised the consulta and accepted to provide support. However, a formal complain of unconstitutionality and illegality by the Ministry of Energy and Mines (MEM) reduced the final involvement of the Office to advising and lending election materials (National Electoral Office, 2002). The technical advice of the national and transnational groups supporting the Frente, and the financial collaboration of trans-national organization such as Oxfam was key to conduct the consultation (Pedro Mendoza, 2005, Bebbington *et al*., 2011). Moreover, organizations such as Oxfam America, Oxfam UK, the Mineral Policy Center, the Environmental Mining Council of British Columbia, and Friends of the Earth from Costa Rica and Ecuador contributed to built the legitimacy of the consultation acting as observers, legitimating and disseminating the experience (Muradian *et al*., 2003).

On June 2, 2002, the *consulta* calling all district inhabitants was held resulting in a massive rejection of the mining project (Portugal Mendoza, 2005). The participation mechanism followed the same procedures of a regular election (secret vote, registered voters, ballot boxes, etc). The consultation was not recognised by the mining company or the national government that claimed that the EIA formal assessment was the legally binding decision making process. The month that followed the *Frente* prevented three public audiences by organizing mobilizations and protests. Finally, the public company owning Manhattans mining licence, revoked it based on administrative grounds, suspending the project. In November, 2002, the President of the *Frente* Francisco Ojeda, a school teacher, won the Municipal elections (Portugal Mendoza, 2005).

4.1.2. Majaz/ Río Blanco conflict (Piura, Peru).

As the Tambograde struggle was coming to an end, a new and relevant mining conflict was emerging nearby, in the Provinces of Ayabaca and Huancabamba (Piura Highlands) in relation with the exploration of a copper-molybdenum mining deposit by a subsidiary of Monterrico Metals (a UK-based mining company). The conflict of Tambogrande not only contributed to introduce mining scepticism in the region, but was also a source of experience and support to local groups and authorities in this new

struggle (Diez Hurtado, 2007, Bebbington, 2012a). For instance, the group of organizations and individuals supporting the *Frente* in Tambogrande -then formalized as Red Muqui- fostered, later in the conflict, the formation of the Majaz Support Group creating a bridge of experiences, technical expertise and strategies among movements (Bebbington, 2012a).

The Majaz mining project was located in the peasant communities of Segunda y Cajas and Yanta (*comunidades campesinas*); lands that are administered under particular institutional arrangements legally recognised by the State (Bebbington, 2012a). The company did not comply with the required approval of the community assembly triggering the rejection and formal complains of the community (Bebbington *et al*., 2007).

In 2004, two "massive" mobilizations were conducted involving thousands of peasants concerned by the environmental (water), economic (agriculture, tourism) and social (land access) impacts of the mining project and the lack of recognition of local institutions decisions that banished the company from their lands. These protests resulted in police clashes, injured and the death of two peasants Remberto Herrero (April 2004) and Melanio García Gonzalez (July 2005) (Bebbington, 2012a). From 2004 to 2007, local activists denounced cases of activist kidnapping, tortures and persistent criminalization (discredit campaigns, unjustified imprisonment, legal prosecution) that even reached the UK justice courts (OXFAM, 2007, 2009, Cobain 2009).

In 2005, mayors, local leaders and social organizations fostered the formation of the *Frente por el Desarrollo Sostenible de la Frontera Norte del Perú* (FDSFNP). The organization, critical with the mining project and the role of the national government, was composed by provincial and district government representatives, peasant communities, *rondas campesinas*, Defense Fronts from Huancabamba, Ayabaca, Tambogrande and other anti-mining groups from the region.

Tension and distrust rose as the government issued measures to limit public participation rights and negotiation attempts by the regional and national governments were failing (Bebbington, 2012a, Diez Hurtado, 2007, Red Muqui, 2009). In this context, a consultation was promoted. As in Tambogrande, the consultation was seen as peaceful channel of participation that would ease local tensions. The Municipalities of Ayabaca and Huancabamba approved Municipal Ordinances calling for a "*consulta*

vecinal" (Bebbington 2012a). With an average participation of 61% (18,017 votes), 94,5% rejected mining activities in the district.

While in Tambogrande the national government minimised the weight of the consultation, in this opportunity it actively tried to prevent and delegitimize it. A vociferous campaign criminalized the consultation and its proponents, stating that the referendum was illegal (mining is national competence), communist, politically manipulated by international NGOs that intended to delay the country's development (Oxfam, 2007, McGee 2008). However, the Peruvian Ombudsman and the Human Rights National council of the Minister of Justice Ministry declared that, even if this mechanisms was non-binding, it was allowed under constitutional law and was legal (Oxfam, 2009, Red Muqui, 2009, CISDE-ALAI, 2009). Moreover, Majaz conflict and its consultation led the National Ombudsman of Peru to initiate a process of regulation of indigenous previous and informed consent rights. What is more, both in Majaz and Tambogrande (and in Esquel, Argentina), mining activities were halted, becoming examples of successful cases.

4.1.3 Toquepala expansion project (Candarave), Tía María project (Islay, Arequipa) Kañariaco project (Lambayeque) in Peru.

After these two consultations in Piura (North of Peru), there were – at least- other 3 consultations in the south and centre-coast of Peru. The following consultation in Candarave (2008, Tacna region, Atacama Dessert), is different from the previous cases as it took place in an area with ongoing large-scale mining activities. The conflict that led to the consultation emerged when the mining company started negotiations to expand its water use rights.

The local and provincial governments, the *Junta de usuarios de riego* (irrigation users) and the Local Fronts of Defence react opposing these new permits. Claims not only pointed to the need to decrease mining water uses due to a regional water scarcity that was affecting agricultural production and forcing migration, but also to the need to compensate for past and present impacts. In January 2008, using the same procedures and legal bases of Majaz case, the major of Candarave called for a *consulta vecinal* (Municipal Ordinance Nº001-2008-MPC/A**)** with the support of the Provincial Governor, local defence fronts and the *Junta de Aguas*. The *consulta* was supported by the Regional Government and had observers from National and International NGOs that also provided technical support (Radio Uno, 2008). 3478 inhabitants (67% of eligible

voters) answered two questions. 92% rejected new mining activities in Candarave and 94% opposed the use of underground and superficial waters for mining activities.

The fourth mining consulta in Peru occurred in 2009 in the Province of Islay (Arequipa Department). Islay is a dry region inhabited by peasants and indigenous groups. The conflict emerged in 2008, when Southern Copper Peru Corporation (owned by Grupo México) started a campaign to promote the large-scale copper Tía María mining project located in Tambo Valley (Gutierrez Zeballos, 2011). Concerns regarding the project impacts on water availability and local livelihoods fostered the formation of the *Frente Amplio de Defensa del Medio Ambiente y Recursos Naturales*. This movement led to organization of a Regional Front with the support of local groups, the Major of Valdivia and National organizations such as the CONACAMI, Cooperacción, Red Muqui and the Coordinadora Andina de Organizaciones Indígenas (Gutiérrez Zeballos, 2011, Red Muqui, 2011).

While the Provincial Mayor refused to call for a Provincial referendum, the call came finally from some district mayors. In September 27th, 2009, the six districts of Islay conducted a *consulta vecinal* on mining activities. While in some districts the "consulta vecinal" was done with the support of the local government and local Ordinances (e.g. Ordenanza Municipal Cocacharcra Nº067-2009-MDC), in others the referendum was conducted by local social movements without the support of the local government but following the same procedures (Gutiérrez Zeballos, 2011, CAOI, 2009). The process was observed by a National Congressman, members of the Flemish NGO Broererlijk Delen, the Peruvian NGOs Transparencia Civil and the CONACAMI (El Búho, 2009, Márquez, 2009). 12,191 votes were issued (48,5% turn-out average in the three districts with voters lists), with a 93 to 98% opposition to the Tía María mining project.

The national government did not recognize the referendum and some months later called for a public audience to present the project's EIA. With the assistance of national and trans-national organizations, around 3000 technical comments on the project EIA were submitted. Moreover, a series of regional strikes (*paros*) were organized as dialogue spaces were perceived as sterile. These strikes were marked by hard police repression, activist criminalization, three deaths and more than 400 injured (Gutiérrez Zeballos, 2011). In the midst of this violence, a report by the UN Office for Project Services, requested by the Government and communities as an "independent" review, concluded that the document had serious deficiencies (UNOPS/PNUMA, 2011).

These events forced the MEM to declare the EIA inadmissible and to suspend the project.

The fifth consulta of Perú took place in September 30th, 2012, and was fostered by the peasant community of San Juan de Kañaris in the northern district of Kañaris (Region of Lambayeque). The Kañariaco mining project was a large-scale copper mine, in exploration stages, owned by the junior Canadian company Candente Copper Peru SA. The project is located in a cloud forest area inhabited and cultivated by two Quechua speaking communities (Municipality of Kañaris, 2012). In 2012, communities decided in an assembly to conduct a *consulta comunal* (community consultation) (Fedepaz s/f). The Mining Company and the MEM claimed that an "official" consultation had already been conducted following the "official" procedures obtaining the legal support needed to proceed exploration activities (Candente Copper, 2012).

The community consultation followed the procedures of regular communal elections (secret, registered voters) without the support of local governments. The result was a 91% mining rejection (1,896 votes, 47,4% turn-out). The process was supported and observed by the Conacami, Red Muqui and leaders of local organizations. The Regional Governor, the Ministry of Agriculture, and representatives of regional offices of Development and Production, and Energy and Mines also participated as observers (Servindi, 2012, Martinez Alier, 2013).

This consultation occurred in a new context as the National government was promoting a Law to regulate indigenous consultation rights. The question on whether the Kañaris are peasant or indigenous, hence entitled with Prior and Informed Consent Rights (PRICR) according to ILO 169, triggered a wide debate (Greenspan, 2013). While the National Ombudsman and trans-national indigenous groups recognise the PRIC for Kañaris communities, the government denies this right and claims that the consultation the government conducted is the valid one. In 2013, the Candente mining company stopped mining exploration pointing to low copper prices (No a la mina, 2013).

4.1.4. Ecuador. Kimsakocha Project (Azuay**)**

In October 2011 took place the first mining community consultation of Ecuador. This was in the Azuay region, not far from Cuenca. The conflict arose from an open pit gold-silver and copper project owned by a Junior Canadian company. The project arose local concerns regarding the impact in water resources among indigenous and peasant

groups located downstream the project area, at early stages of mining exploration works (Pérez Guartambel, 2012). The idea to conduct a consultation emerged in a context of growing pressures from the National Government to promote a national mining agenda, and this project in particular. And, in the midst of increasing verbal and legal de-legitimation and criminalization campaigns aimed at Ecuadorian indigenous and anti-mining activists (interview with local activists). Moreover, local indigenous and peasant leaders were in contact with LA (in particular Ecuadorian and Peruvian) indigenous, anti-mining and Human Right movements (interview with national anti-mining movement leader). For instance, in June 2011, local indigenous leaders led the organization of a Continental peoples meeting with strong emphasis on the impact of mining agendas on the environment and indigenous groups (Pérez Guartambel, 2012).

A *consulta comunitaria (indigenous community consultation)* was called by the *Junta de Aguas,* an indigenous and peasant organization that administers the access to household water downstream the project. The consultation was grounded in ILO 169, the UN Declaration on indigenous rights and the Ecuadorian Constitution (Pérez Guartambel, 2012). The vote was carried out by inhabitants of the local governments of Victoria del Portete and Tarqui. Only Victoria del Portete Mayor was in favour of the consultation. The organization was led by local leaders of the Federation of Indigenous and Peasant Organizations of the Azuay with the support of national indigenous organizations (ECUARUNARI, CONAIE). The consultation followed the Junta de Aguas election procedures: one vote per water right (a family can have more than one right). Vote was secret and for registered water right owners (head of family, not individual). The consultation had national and international observers from organizations and the National Ombudsman office. Days before the consultation, newspaper pages and leaflets were distributed calling people not to vote. Nevertheless, there was 67% turn-out (1,037 votes) with a 92,3% opposition to mining activities. The Provincial and National government did not recognize the vote and led a strong discrediting campaign.

4.2. Guatemala and Colombia

4.2.1. Guatemala

The third Latin-American bottom-up mining consultation after Tambogrande (Peru) and Esquel (Argentina) occurred in Sipakapa (Guatemalan highlands) in June 2005 (Urkidi, 2011b). In 2003, Montana (now owned by the Canadian GoldCorp) got

the exploitation permit for the Marlin gold mine in the municipalities of Sipakapa and San Miguel Ixtahuacan. These municipalities are inhabited by peasants that identify themselves, mostly, as indigenous. In Sipakapa, 87% live in relative poverty and 33% in absolute poverty (Segeplan, 2002).

Researches and interviews underline that the first meetings held by the company with local groups and leaders were non-transparent, arbitrary and pro-mining (Van de Sandt, 2009, Urkidi, 2011b). The opposition to mining in Sipakapa was born from the mistrust that information activities arose in many community and indigenous leaders. Indigenous leaders met with local priests and national groups (Movimiento de Trabajadores Campesinos, MadreSelva, CALAS) in order to get information about mining (Van de Sandt, 2009). These national organizations were already within Latin American networks (for instance MadreSelva within OilWatch) and distributed information on the environmental impacts of mining activities. Local leaders from Sipakapa visited other gold mining areas in Central America such as Valle de Siria in Honduras, and got in touch with regional networks against mining. The Central American Anti-Mining Network was a key information source for Guatemala's incipient movement.

In December 2004, a community that blocked the passage of a truck heading to the mine in a neighbouring province was strongly repressed by police and military forces, resulting in the death of the peasant Raul Castro Bocel (Prensa Libre, 18 January 2005; Castagnino 2006). The public resonance and violence of these events forced the major of Sipakapa (favourable to the mining project) to arrange a public meeting to discuss the mining issue. This meeting led to a Municipality agreement to conduct a consultation (as reflected in Municipal Act 04-2005), in good faith and according to the customs and traditions of Sipakapense people. The consultation was based on the Municipal Code and ILO 169. The idea to conduct a consultation was circulating since the beginning of 2004, born from an Italian priest who was acquainted with the Tambogrande experience (Van de Sandt, 2009).

The consultation was organized through the articulation of local, national and international organizations: the Municipal Development Council (COMUDE), the parish and its catechists, the Linguistic Community of Sipakapa, the local Justice of the Peace, MadreSelva, the National Association of Maya Lawyers, the Catholic Church of San Marcos, and the Indigenous Advocacy of Human Rights, among others. National and international observers and human right activists were called in to verify the

process. Montana tried to illegalize the process but the Guatemalan Constitutional Court rejected the company's appeal. The same day of the consultation flyers saying that the consulta was not going to occur were delivered in Sipakapa, presumably as a boycott by Montana.

However, 45% of the registered electorate took part in the consultation in Sipakapa (2564 people) and 98% voted against mining. The voting was carried in each community, some voted by a show of hands, while others by secret ballot. In 2007, the Guatemalan Constitutional Court declared that Sipakapa consultation was valid under the 169 Convention and the Municipal Code, however, non-binding since such conventions and laws were imprecise, and not coherent with the Constitution; and given that mining activities were of national public interest, hence, the municipality of Sipakapa's had no authority to decide on the matter (Xiloj and Porras, 2008).

The Marlin mine is in 2013 in full operation despite the consultation and different legal demands in relation to environmental impacts and the violation of human rights[19]. However, the process of Sipakapa was a milestone in Guatemalan resistance against mining. The experience has been reproduced in 56 consultations on metal mining in the country from 2005 to 2012 and more than 600.000 people have take part on them, becoming one of the most relevant political processes of recent years in the country. A documentary on Sipakapa's consulta (Revenga, 2005) has spread the experience worldwide and became a key instrument for the spreading of the strategy in Guatemala and Latin America.

52 of those 57 consultations occurred in western Guatemala and most of them in the highlands, mainly due to the leading organizational role of the Western People's Council (WPC). The WPC is a regional network organized in 2008 as a coalition of provincial councils (as the Huehuetenango Natural Resources Assembly which has a leading role), organizations working in the defence of natural resources and local leaders of the municipalities that have held consultations. WPC's main objective is to develop a community-based strategy against mining and has fostered many consultations. There are also national and international networks and NGOs[20] supporting the development of the consultas, but one key characteristic of the Guatemalan process is the synergies between the anti-mining movement and the

[19] In 2010, the Inter-American Commission on Human Rights ruled in favour of the precautionary closure of the project because of potentially harmful health and environmental impacts.

[20] Mainly environmental and human rights associations and NGOs from Europe and Canada (CATAPA, NISGUA or Rights Action among many others).

municipal governments in the organization of most consultations, and the active incorporation of local leaders in the regional network (Mérida and Krenmayr, 2008, 2010, Urkidi, 2011b).

Apart from two cases (Sipakapa, Santa Rosa), the rest of consultations are not associated to imminent mining projects but to exploration or research licences, so they could be understood as preventive consultations. The Guatemalan government has not accepted community referendums and has proposed to regulate them with a specific law (Prensa Libre 23/02/2011). The WPC defend that the current legal framework is sufficient to accept the consultations and their results and that further regulations would just lead to more restrictive conditions for participation (Prensa Libre 23/02/2011, Nisgua, 2011).

Indeed, the Guatemalan anti-mining movement seeks to be inclusive in many senses, resulting in a heterogeneous consulting process. Mainly indigenous but also non-indigenous communities have been consulted (these last ones not appealing to ILO 169 but just to the Municipal Code), by secret ballot or by show of hands, in municipal or just communitarian consultas. In some cases, mainly in Huehuetenango, non-registered people have been able to take part as in indigenous community meetings. This has lead to a biggest participation of women than in other voting processes since women are proportionally less registered than men in Guatemala (Mérida and Krenmayr, 2008, 2010). Such *consultas* have spread in Guatemala also to other extractive projects, such as hydroelectricity.

4.2.2. Colombia. Mandé Norte Project (Carmen de Darién, Chocó).

Between the 24th and 28th February, 2009 the first community consultation on mining in Colombia took place. The conflict started with the arrival of Muriel Mining (Río Tinto and other companies), and the initial consultation activities led by the government and company to obtain the communities approval to explore for copper, gold and molybdenum ores. Exploration sites were located in afro-descendant and indigenous people lands, including their homes and sacred areas, in the departments of Antioquia and Chocó. Indigenous and afro-descendant communities started to search for information and contact a national church organization working in the area. A support group was created, bringing information, documentaries and activists from other countries and communities to Carmen de Darién (Jahncke and Meza, 2010). Communities claimed that the official consultation process was not adequately

conducted, excluding affected communities and endangering their livelihoods. As a reaction to local unrest, the national government militarised mining areas, intimidating and limiting community access (Jahncke and Meza, 2010, Movice, 2012).

Communities, inspired by the Sipakapa experience, promoted the organization an inter-ethnic consultation for the indigenous and afro-descendant communities affected by the mining project, following their own procedures (own language, registered, older than 14 years old). Human Rights, indigenous, church and anti-mining organization representatives from Colombia, Paraguay, Honduras, Guatemala, Germany and Canada observed the process (CENSAT, 2009).

The consultation was grounded on international and national indigenous consultation rights, including the Colombian Constitution's special consideration for indigenous consultation rights. The legality and legitimacy of the process was confirmed by an important verdict (T-769, 2009) of the Colombian Constitutional Court that led to the suspension of the project. Nevertheless, the year that followed campaigns to delegitimize local communities and further intimidation actions were conducted by the government in the area. In January 2010, the Colombian army conducted air bombings in the area (Movice, 2012).

Consultation attempts have also been deployed by other non-indigenous communities in Colombia. During the 2011, social movements of the department of Santander tried to conduct a popular consultation framed around the protection of water to stop gold mining developments in up-stream *Paramo* areas. This initiative was politically blocked (Comité por la defensa del agua y el páramo de Santurbán, 2012). There was also a national attempt to conduct a popular consultation on water that succeeded to link a wide range of Colombian social movements. Recently, in July 2013, the Municipality of Las Piedras (Tolima Region) conducted a popular consultation on mining activities resulting in a 60% participation and 99% rejection of a large scale mining project to be carried out by Anglo Gold Ashanti (EJOLT, 2013).

4.3. Argentina

A third travel path born in Tambogrande reached Argentina ten years ago with wide impact in national mining debates. The second consultation conducted in LA took place in Esquel, in March 2003. The city of Esquel (28.089 inhabitants), is a main settlement of the Argentinean Patagonia, an arid region also inhabited by Mapuche indigenous communities. Esquel has a growing touristic sector but, in 2002, 25% of the

population was unemployed and 20% was under the poverty line (INDEC, 2002). In this context, and with the support of the local, provincial and national governments, Meridian Gold, a US junior mining company, arrived with the intention to extract a gold and silver deposit located 6.5 kilometres away from the city.

The use of cyanide leaching techniques and the risks of water pollution in a water-scarce environment arose initial concerns, triggering weekly neighbours' meetings. The perception that the urgency to approve the project was undermining the quality of the technical assessment and excluding local concerns led the neighbours' assembly (AVA -Asamblea de Vecinos Autoconvocados) to oppose the mine. The AVA brought together neighbours and organizations with different backgrounds, specialists in law, chemistry, medicine, geography, journalism and education, Mapuche groups and inhabitants of Esquel's poorer areas who became key information channels to marginal areas of the city. The movement deployed a wide range of strategies, from legal and administrative queries, to regular mobilizations, development of technical arguments and advocacy networking. As the AVA jumped scales, contacting and obtaining the support of regional, national and international activists, organizations and networks, Esquel conflict started to be understood as part of an environmentally unjust process affecting many communities in LA (Urkidi and Walter, 2012, Zuoza, 2005).

Even if the connection with Tambogrande is not clear for every interviewee, there is evidence that some active members of the AVA got acquainted with Tambogrande's struggle and their "consulta vecinal" via Internet (Zuoza, 2005), fostering the idea of conducting a mining referendum. Moreover, Colao and Claps (2005) signal that the AVA established early contacts with the Mining Policy Center (now Earthworks). This NGO supported Tambogrande consultation and financed (with Greenpeace Argentina) the visit of a US hydrogeologist to Esquel, the same that had been in Tambogrande.

The Provincial Mining Secretary was promoting a quick and technical assessment of the project, ignoring local calls for a wider debate that would include social, cultural and environmental considerations. In this context, local mobilization increased and the idea to foster a mining consultation gained force. Two representatives of the local Deliberative Council, close to the AVA, presented a Municipal Ordinance proposal to call for a *consulta popular* (popular consultation/referendum) using a legal mechanism present in the Provincial Constitution. While the proposal was initially

rejected, Esquel mounting tension fostered its approval by most political parties, as way to pacify local unrest.

A few days after the *consulta popular* that resulted in a 81% rejection to the mining project (13,845 votes, 75% turn-out), activities were halted and the Chubut provincial legislature approved a provincial ban on open-pit mining. The Esquel case became a national referent. Moreover, the AVA created an online platform with information on mining activities in Latin America (www.noalamina.org) that is still nowadays a key source of information for LA activists. Some years after Esquel consultation, a national anti-mining network was formed. Furthermore, as not only mining but other environmental conflicts were gaining public relevance, a wider network was formed composed by assemblies engaged in environmental conflicts all over the country (e.g. paper-mills, transgenic soya plantations, deforestation, hydropower plants): the Unión de Asambleas Ciudadanas (Walter and Martinez Alier, 2010).

The Esquel conflict and consulta popular was a landmark in the public debate on environmental (and mining) matters in Argentina and also showed the strong political power that a non-binding consultation could have. The years that followed, as mining investments were rising, more EJ movements struggling against mining tried to foster similar consultations. In particular, the Government of the Province of Catamarca, the poorest province of Argentina where the oldest (since 1997) and larger gold-copper mining operates (La Alumbrera), managed to stop in the courts at least three attempts of consultation in Tinogasta and Andalgalá.

Lonco project (Neuquén). The second consultation in Argentina took place in the Municipality of Loncopue. After a series of legal setbacks and different intimidation campaigns aimed at social movements and Mapuche indigenous communities, exploration activities were advancing without permits or consultation procedures, triggering the involvement of a local priest. This priest brought the matter to town leading to a series of meetings that connected the urban movements with rural indigenous groups. A lawyer and anti-mining activist from Esquel who was living in Loncopue transferred his professional and activist experience to the emerging movement, advising and supporting the legal strategy (Yappert, 2009).

The call for a binding referendum to approve/reject a Municipal Law forbidding large scale open-cast mining activities was fostered by the Mapuche Communities, neighbours assemblies, environmental groups and, as in Esquel, some politicians whose

political parties were pro-mining at the provincial and national level but who aligned themselves with anti-mining groups locally. With a 72% participation turn-out (2588 votes), 82% voted in favour of a mining prohibition but the Provincial Government presented a legal claim of unconstitutionality to disable the referendum (Yappert, 2009, Aranda, 2012).

5. Discussion

5.1. Contesting environmental injustice in contexts of criminalization

The mining conflicts that led to consultations involved strong scalar struggles. Passionate and high-stake debates revolved around how the spatial distribution of uncertain benefits and impacts is defined or which are the legitimate scales of participation and decision making to govern mining activities. Central governments and EJM struggle for the hegemony of scales triggering a politics of scale (Towers, 2000). Consultations are not the first or only action deployed by EJMs, but are promoted alongside a wide range of strategies aimed at influencing official scales of meaning and regulation (e.g. negotiations, mobilisations, legal and technical allegations, dissemination activities).

EJ scale frames (Kurtz, 2003) deployed in our cases reflect Schlosberg's (2007) key dimensions of EJ: recognition, distribution and participation. Anti-mining groups see the approval of mining projects as the misrecognition of their material and cultural dependence on land and water and a disregard of their views and customary procedures (Haarstad and Floysand, 2007, Muradian *et al*., 2003, Urkidi, 2010). EJMs claim that developing mining activities jeopardize local (and supra-local) livelihoods dependent on forests, land and water quality and availability. Concerns regarding the impacts of mining activities in water quality and availability for local economic activities and household uses are common to all studied cases. Concerns about health also appear (for instance, because the use of cyanide).

While affected communities signal such concerns as grounds to redraft or even stop a mining project and national mining plans, governments and companies claim that these decisions are not for local communities to be made. Experts within a national decision-making process should have the last word: it is argued that mining is an issue of national interest. Local alarm is framed as an exaggeration that undermines the

positive impacts that mining jobs and economic benefits entail. Risks can be assessed precisely and dismissed according to governments and mining companies. Moreover, critical communities and EJM's views are being labelled by LA national governments as irrational, ignorant, anti-development, politically driven, promoted by foreigners' interests or by a radical, subversive environmentalism (Bebbington, 2012b), in hand with criminalization processes (OCMAL, 2011).

Official participation arenas become frustrating spaces given the partial information that is shared and the powerless participation modes they offer (Cole and Foster, 2001). As official mining decision-making procedures are unable to address local communities concerns, disputes form around these procedures and their decisions (Muradian *et al*., 2003, Suryanata and Umemoto, 2005, Walter and Martinez-Alier, 2010, Urkidi and Walter, 2011). It is becoming increasingly common for EJMs to prevent or boycott public audiences, as these are seen as an empty requisite for project approval (Jahncke and Meza, 2010). There were cases of boycotts of public audiences in Tambogrande, Toquepala, Tía María, Esquel and Loncopue. Indigenous communities reject and misrecognize the alleged consultation processes led by mining companies and governments in Peru, Colombia and Guatemala. In Ecuador (Kimsacocha) and Argentina (indigenous communities of Esquel and Loncopue) communities claimed that consultations were never conducted (Pérez Guartambel, 2012).

Furthermore, one of the findings of this research has been the role played by violence in the fostering of consultations. Human Rights claims have been identified as a particular root of Latin American EJMs (Carruthers, 2008). Mining referenda emerged in contexts of repression and criminalization of activists, where concerns regarding the physical and psychological integrity of activists were rising. In this line, consultations can be seen as an innovative form of protest that aims to foster participation, promoting a democratic setting that protects its participants. These consultations have succeeded to pacify local tensions at least for a while.

While struggles over scales of meaning and regulation are not new in mining conflicts nor the contexts of activist and protest criminalization and repression, the particularity of these EJMs has been their ability to transform a risky protest environment into a democratic participation process. To do so, EJM have constructed a new scale of regulation alongside a glocal participation institution. The next subsection

discusses the significance of the scalar dynamics that led us to label this process as glocal and the following addresses the role of this participatory institution in disputes over scales.

A glocal institution

Consultations/referenda are not local but a glocal participation institution. While grounded in claims for apparently local interests and values, consultations do not respond to a militant particularism (Harvey, 1996). Community consultations are born from a glocal demand for civil society empowerment and democratization in government decision-making processes in extractive industries. Analyzing the spread of consultations in Latin America, we identify that this institution was fostered hand in hand with a diversity of spatial processes that have been key in its emergence and spread in Latin America. These spatial processes are contributing to construct a common EJ anti-mining framework of action in the region.

Mining consultations are promoted by social movements composed by a myriad of groups, including indigenous and peasant's movements, farmers, (urban) professionals, local priests, teachers, community leaders, NGOs. As mining conflicts unfolded, these social movements jumped scales engaging with networks and organizations (e.g. environmental, anti-mining, Human Rights, indigenous, Catholic) that move across multiple geographical scales. These networks circulate information, experiences and strategies, promote the mobility of activists to learn and share experiences among communities, to LA and international forums, to foreign (e.g. UK courts in Majaz case) and international tribunals (e.g. Sipakapa to the Inter-American Commission on Human Rights). For instance, alliances among LA and Canadian anti-mining movements have struggled to contest mining companies at multiple scales, campaigning to influence Canadian regulations or even the Toronto Stock exchange, the main ore-mining trading organization in the world, to adopt human rights criteria for their members (North and Young 2013).

Additionally, among the EJMs and networks driving the spread of consultations, some were born from the first mining consultations experiences: Tambogrande, Esquel and Sipakapa. These first cases became a milestone in the mining consultation processes in LA and in their own countries. Red Muqui, born from the Tambogrande conflict was a key provider of information, experience and materials for the Majaz/Río Blanco case and following consultations. The 'Noalamina' platform, coordinated by the Esquel anti-

mining movement, is a key provider of information and resources for LA communities. In Guatemala, the great multiplication of mining consultations is partially grounded in the national and international repercussion of Sipakapa's experience. With the support of different national NGOs and associations, two regional networks were created around mining and hydropower conflicts (Huehuetenango Natural Resources Assembly and the Western Peoples Council). There has been an experience-sharing process, where new consultations have been organized by knowing and learning from previous ones via these national and trans-national organizations and networks (Red Muqui, 2009, Jahncke and Meza, 2010).

Organizations and networks have not only played a key role spreading the experience of previous consultations, but have also provided logistic, technical and sometimes financial resources. A wide range of trans-national actors have also supported consultas as observers, contributing to build the international legitimacy of these processes. Oxfam, Friends of the Earth, Greenpeace, the Mineral Policy Centre, Peace Brigades International, Nisgua, Catapa, Rigths Action in Sipakapa and Mining Watch are among the international observers that have been present in LAC mining consultations.

Furthermore, as consultation experiences multiplied in LA, national and trans-national networks have deployed efforts to systematize and strengthen the ongoing experience and its lessons, organizing international events (ej. Bi-national encounter Ecuador-Peru on Community Consultations, February 28, 2012) and elaborating reports (eg. Jahncke and Meza, 2010, Duthie, 2012, McGee, 2008, CISDE-ALAI, 2009, Mérida and Krenmayr, 2010). National and trans-national movements have also supported legal strategies -to defend the legality of consultations and condemn Human Rights abuses- at national and international tribunals (Constitutional Court case in Colombia, Interamerican Human Right Commission presentation of Sipakapa), systematizing and denouncing the growing number of criminalization cases (eg. OCMAL, 2011).

When considering how scale frames and consultations have travelled among LA communities, we point that Internet and documentaries are becoming powerful transporters of testimonies and experiences amongst distant people and places. While the role of internet has been discussed in previous studies (Bickerstaff and Agyeman, 2009), we also found that documentaries are significantly contributing to social learning processes and to the construction and deconstruction of scale frames.

Sipakapa's documentary was a key source of inspiration in the organization of the Embera Katio indigenous consultation in Carmen de Darien (Colombia, 2009) (interview with Colombian activist, Jahncke and Meza, 2010). An indigenous leader that led the consultation of Ecuador also underscored the relevance of videos and documentaries to explain the implications of large-scale mining activities[21]. The documentaries on the Choropampa mercury spill in Cajamarca (Peru), the case of Tambogrande and Sipakapa consultations have been widely distributed in the region (Choropampa: el precio del oro, 2002; Sipakapa no se vende, 2005; Tambogrande: mangos, muerte, minería, 2007). These and other documentaries have showed the magnitude of large-scale mining activities, their impacts and the environmental justice movements opposing them, contributing to a regional EJM learning process. In this vein, we agree with Bickerstaff and Agyeman (2009) that there is a promising line of research to be explored in relation to the development of "assemblage" perspectives -coming from the actor-network theory (ANT)- when analyzing how people, texts, machines, devices and discourses relates and collectively constitute EJ scales.

Colombian activists highlight how Carmen de Darien indigenous communities were moved to see and hear -in the documentary on Sipakapa consultation- other indigenous groups faced with similar struggles, telling similar histories and learning from their consultation experience (interview with Colombian activist). Documentaries played a central role making affected communities acknowledge that their conflict was not local, but simultaneously local, national, regional, global and structural. In this process, a common perspective is constructed and solidarity linkages are strengthened.

The sources of legitimacy and support of consultations are profoundly multi-scalar. The political power of consultation is also related to the ability of supra-local social movements to move and disseminate these events at multiple scales, creating new supports and reactions. Furthermore, consultations, whether *vecinal, popular, comunitaria or inter-étnica,* are embedded in municipal, national and international norms and rights that are reclaimed by EJMs. As the glocalisation concept sustains the local and the global are mutually constituted (Swyngedouw, 2005). In this vein, Latin American mining consultations are a glocal institution since they are constituted by (and constitutive of) discourses, regulations and actors rooted at different, multiple and changing scales.

[21] Interview conducted by Sara Latorre and Stalin Herrera to local leader shared with the authors of this paper.

5.2. Community consultations: A hybrid institution

Diverse scalar dynamics and actors were key to spreading the lessons and building the legitimacy of consultations. However, the ability of EJMs to foster the construction of a new scale of regulation for mining activities -local participation via consultation/referendum- is closely related to the formation of alliances between EJMs and local governments[22].

Consultations are the product of a challenging spatial grammar (Bulkeley, 2005) that combines the glocality of EJMs and local governments. Consultations can be seen as a hybrid institution that combines the (formal and informal) competences (i.e. regulation, management, communication) and different forms of power (e.g. legitimacy, networks, resources, trust) of social movements and local governments.

The involvement of local governments in consultations reflect the heterogeneity of interests and values across different government bodies. This singular feature of consultations points to the need to further problematize the role of governments in environmental governance frameworks. As consultations not always aim to "bypass governments" (Delmas and Young 2009), but, on the contrary, anchor part of its legitimacy in some its bodies (local governments).

The alliance with local governments was key to building the legitimacy of consultations (Red Muqui, 2009), framing them as a formal local (and democratic) participation institution, not a mere anti-mining social movement strategy (Muradian *et al.*, 2003). The fact that the first cases of consultations were conducted with the support of local ordinances contributed to built the grounds to legitimate the following wave of consultations, conducted with or without this formal support (e.g. some municipalities in the Tía María consultation in Peru, Kimsakocha case in Ecuador). Moreover, the involvement of social movements reduced, in some places, the distrust that many rural communities have in relation to government bodies, including municipalities. In Guatemalan consultations, the fact that actors not directly related to the municipal government were also promoting the consultas was pointed as a source of local trust and

[22] Cases of consultations conducted without alliances with local governments are the exception and not the rule. In some cases local governments have rapidly aligned with social movements or even played a central role in the formation of a front critic to mining activities (e.g. Majaz, Toquepala, Guatemala's wave of consultations). In other cases, local governments have changed their position as conflicts unfolded. They finally allowed or supported a consulta in order to preserve local governability or local power (e.g. Esquel, Sipacapa), sometimes adopting a position differing their national committees.

willingness to participate (Mérida and Krenmayr, 2008, Mérida and Krenmayr, 2010, interviews Guatemala 2009). We could also say that the legitimacy of consultations is – in part- both a cause and consequence of the hybrid alliances formed between local governments and social movements.

In contrast with emerging forms of (hybrid) governance that continue to exclude disempowered groups (Ford, 2003, Swyngedouw *et al*., 2002, Swyngedouw, 2005), consultations are organized by and take into account marginalised groups as indigenous peoples, women and peasants. However, while consultations could be framed as an hybrid institution that exemplifies a process of governance from "below" (Paterson *et al*., 2003), we stress that the strength and legitimacy of this institution is multi-scalar.

5.3. Reconstructing scales of regulation

Consultations constitute a new scale of regulation that aims to contest the hegemony of centralized scales of meaning and regulation governing mining activities. LA mining consultations/referenda are based on the claim that communities -whether indigenous or not - have the right to participate in high-stake decisions affecting their livelihoods. This right is recognized in a diversity of indigenous and non-indigenous international, national and municipal norms and rights (Jahnchke Benavente and Meza, 2010, Fulmer, 2011). However, how participation is framed by regulations and actors varies widely. As analyzed by Arnstein (1969) in his 8 rungs participation ladder (1. manipulation, 2. therapy, 3. informing, 4. consultation, 5. placation, 6. partnership, 7. delegated power and 8. citizen control) there are different levels of exclusion/involvement and empowerment. As pointed out by Arnstein, as we step down the ladder, frustration rises. Communities are struggling to climb this ladder.

Community consultations reclaim and rebuild the right of affected communities to participate, in meaningful and empowering ways, in decisions on high-impact activities affecting them. With this common aim, in each context, communities strive for local participation rights appealing to, combining and reshuffling available regulations, rights and local traditions[23]. For instance, communities are expanding and

[23] A relevant source of legitimacy of consultas/referenda is rooted in the procedures used to consult people that appeal to democratic values and to indigenous consultation rights. In most cases communities put in place hybrid procedures that combine democratic participation institutions (eg. official election procedures), indigenous customary rights and the experience of previous consultations. In most consultations, including many indigenous communities in Guatemala, the consultation followed the same procedures than those of a regular election: formal call to vote, registered voters, vote is secret and the quality of the process is certified by external observers, as in Tambogrande. In Sipakapa, each of the 13

re-signifying in their discourse and practices the way "consultation" is framed in the ILO 169 -and the United Nations Declaration on the Rights of Indigenous people- forcing new debates on the convention's reach (McGee, 2008, Fulmer, 2011). The ILO 169 states that consultations should be conducted by States (Fulmer, 2011, Jahncke and Meza, 2010). The fact that communities and local governments led the process stretches the Convention's reach. In a similar vein, the way consultations use laws that allow for local consultas/referenda in local governance matters (Peru, Argentina, Guatemala) to mining projects, challenges the national-government scale monopoly in mining decisions.

Our argument is that consultations entail the construction of a new scale of regulation that is more than the sum of existing regulations and rights but while grounded on these, reclaims their scope and meaning. Towers (2000), Bickerstaff and Agyemann (2009) and Kurtz (2003) highlight how EJMs successfully adjusted their scale of meaning with the appropriated scale of regulation. LA consultations point to something more. In our case studies, EJM were able to construct a new regulation scale according to their scales of meaning. The significance of community consultations is that communities are not only mobilizing and discursively struggling to contest the governance of mining activities, but deploying innovative strategies to create and put in practice empowering and democratic participatory institutions.

The legitimacy of consultations as an emerging scale of regulation is in dispute by different actors, even within states and governments themselves. While national governments' mining departments reject, ignore or criminalize (define as illegal acts) these participatory events, some local and provincial governments, as well as national and regional departments, authorities or tribunals recognize this participation institution. However, the strength of this legitimacy grounded in the –disputed- "legality" of the consultation is also becoming a weakness as the struggle is now revolving around the formalization of consultation rights with risks of cooptation, exclusion and de-naturalization. This is however not surprising, as disputes over scales are always in motion.

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communities consulted chose its own procedure, some followed a traditional western election format, other voted by show of hands or other formats. However, the consultation was called by the Municipality and all members of the Municipality could vote (even non-indigenous). In Sipakapa, indigenous customary votes were the most critized by the government and companies that claimed that their result could be manipulated (Fulmer et al., 2008, Schenk 2006; see also Business Wire 2005). The consultation conducted by indigenous groups in Colombia followed the example of Sipakapa, merging procedures.

6. Conclusions

The process of meeting, consulting and voting is a traditional political space in many indigenous and peasant communities, and a part of the functioning of many groups and institutions in Latin America. However, we argue that the mining consultations studied in this paper, while nurtured and legitimated by these traditions are something different. A decade passed since Tambogrande consultation in 2002, and more than 68 similar consultations have been conducted in 5 LA countries. When this paper was been written new consultations on large-scale mining projects were conducted in communities in Colombia (in the region of Tolima in 2013) and Guatemala, and Uruguay was debating the possibility to conduct one at the national level on large-scale iron ore mining.

In this paper, we have argued that mining consultations constitute a common institution in the current anti-mining protest cycle in Latin America. There are growing movements combining the local and the global in environmental justice campaigns which should not be interpreted at as a collection of "militant particularisms". Consultations are becoming a glocal institution that aims to contest the scales of meaning and regulation that national governments set to promote in mining activities. Consultas/referenda re-construct the scale of regulation according to the scales of meaning that EJMs shape in the course of mining conflicts. These scales of meaning are co-constructed and defended in a dynamic multi-scalar process.

Consultations reclaim and re-signify the right of local population and indigenous peoples to participate in empowering forms in high-stake decisions affecting their lands and livelihoods. In mining conflicts there is a clash of development views, regarding not only environmental matters, but also political and institutional models. In this vein, consultations are not just put forward as a form of protest but also as a decision-making event that challenges official decision-making (scales of regulation).

Finally, the process of consultations opens up relevant arenas for enquiry, such as why consultations have been promoted in some countries and not others (like Bolivia or Chile), or what are the medium and long-term consequences of consultations for local movements and their struggles. Furthermore, recently consultas/referendums are also been proposed by EJM opposing large-scale dams projects in Latin America (e.g. Guatemala, Brazil, Argentina), offering room for new explorations and comparisons.

Chapter 3. A social multi-criteria evaluation approach (Íntag, Ecuador)

Sources: own pictures.

Based on the paper: Walter, M., Latorre, S., Munda, G. and Larrea C,. "A social multi-criteria evaluation approach to assess extractive and non-extractive scenarios for Íntag, Ecuador". Submitted to *Land Use Policy* in March 2014.

1. Introduction

Since the 2000s, Latin America (LA) is the main ore mining investment destination of the world (Ericsson and Larsson, 2013). The expansion of mining activities is fostering a growing number of conflicts that underlie contrasting values and interests regarding the (local and national) economic, environmental, social and cultural implications of developing extractive activities (Bebbington *et al*., 2008b, 2012GF, Urkidi and Walter 2011, Svampa and Antonelli, 2009, Muradian *et al*., 2012, Latorre and Herrera, 2014; Bebbington, 2012). The support to extractive activities is shared by most LA countries, transcending ideological labels, under a common discourse that ties mining activities to national economic wellbeing (Bebbington and Humphreys, 2011; Hogenboom, 2012b). LA governments hegemonise a discourse that stresses the national scale, pecuniary criteria and technological solutions to mitigate environmental impacts. Moreover, critical voices and local concerns are delegitimized and criminalized closing down social debate on the economic, social and environmental implications, at different scales, of developing mining activities (Saavedra, 2013, De la Torre, 2012, Veltmeyer, 2013).

The case of Ecuador is an example of the trends mentioned above for LA. With the arrival of the new elected president Rafael Correa to power in 2007, this country moved toward a post-neoliberal regime in which extractive industries play a central role. These industries are the main source of revenues for welfare polices. Oil revenues have sustained the Ecuadorian economy since the 1970s. However, in a context of decreasing oil reserves, large-scale mining activities -which are new in Ecuador- are seen as the substitute for oil. However, the expansion of the oil and metal mining frontier – which are high impact activities (Prior *et al*., 2012, Orta-Martinez and Finer, 2010)- is overlapping with environmental and social sensitive areas fostering conflict (Latorre and Herrera, 2014). The national government has approached mining contestation through coercive actions, criminalization and de-legitimation (Saavedra, 2013, Chicaiza, 2010; Latorre and Herrera, 2014).

Ecuador has promoted regulatory reforms that increase the state participation in mining activities, through both the creation of a national mining company (ENAMI) and the increase of mining taxes and royalties. Complementarily, these mining legal reforms position the Ecuadorian state as the principal responsible to broker potential conflicts arising from mining activities (Velázquez and Moore, 2012). Moreover, the

government has adopted an oppositional stance toward autonomous and critical social organizations. In general terms, there is a de-corporativization of the state drawing on an alleged need of neutral technocratic personnel (Ospina, 2009; De la Torre, 2012).

Íntag, located in the north of Ecuador, presents a relevant case of examination. Since the 1990, local communities and organizations have expelled, in two occasions, mining companies that were attempting to explore a copper-molybdenum deposit in the area of Junín (Íntag). Recent news that the Junín mining project will be reactivated in a joint-venture project between the Ecuadorian (ENAMI) and the Chilean (CODELCO) national mining companies (ENAMI, 2013) are feeding old and new concerns and expectations in Íntag; Which could be the social, economic and environmental implications of developing a large-scale copper mine in Íntag? Are there technologies able to prevent and/or mitigate the environmental impacts of mining activities? How much -mining royalties- will be invested in Íntag if the mine is developed? How will mining royalties be invested locally? Is mining the only viable option for Íntag? Which performance could other activities have in comparison to mining activities?

Íntag future is embedded in deep complexity where there are not only uncertainties but even ignorance regarding the possible economic, social, cultural and environmental implications of choosing among different development paths. There are values in dispute, risks are high and decisions are urgent. These are the features of post-normal science problems (Funtowicz and Ravetz, 1991, 1993) that require new scientific approaches that stress the quality of processes by improving transparency and expanding the "peer-review community" to include the perspectives and knowledge of different social actors.

Social multi-criteria evaluation techniques (SMCE) were developed to address sustainability problems characterized by deep complexities and unavoidable conflict (Munda 2004). SMCE introduce social and participatory approaches that allow to take into account the controversial, multi-dimensional and uncertain outcomes of decisions (Martinez Alier *et al*., 1998, Munda, 2004) in a systematic, interdisciplinary and structured way (Munda, 2008).

As a tool for conflict management, SMCE has demonstrated its usefulness in many policy problems in various geographical and cultural contexts (see e.g. Gamboa, 2006; Garmendia and Stagl, 2010; Monterroso *et al*., 2011; Munda and Russi, 2008; Özkaynak, 2008; Russi, 2007; Scolobig *et al*., 2008; Soma and Vatn, 2009; Straton *et al*., 2010; Zendehdel *et al*., 2010). The main point of force is the fact that the use of

various evaluation criteria has a direct translation in terms of plurality of values used in the evaluation exercise. From this point of view, social multi-criteria evaluation can be considered as a tool for implementing political democracy. SMCE puts its emphasis on the transparency issue; the main idea being that results of an evaluation exercise depends on the way a given policy problem is structured and thus the assumptions used, the ethical positions taken, and the interests and values considered have to be made clear.

SMCE can provide a wide range of "results" such as signalling one or a group of solutions, providing a classification, or structuring the relevant alternatives and their consequences (Roy, 1985). In this line, multi-criteria techniques can either open-up or close-down policy discourses, or both (Stirling, 2006). On the one hand, a "closing down" appraisal aims to support decision-making by "*cutting through the messy, intractable and conflict-prone diversity of views and develop instead a clear authoritative prescriptive recommendation*" (p101). On the other hand, an "opening-up" appraisal will reveal wider social and policy discourses making explicit their uncertainties and implications. The latter, includes different perspectives and issues, acknowledges ignored uncertainties and highlights new options.

Scenarios have been pointed as valuable tools to address assessments in contexts of uncertainty and to contribute to open-up policy debates (Kowalski *et al*., 2009). Scenarios allow to widen the spatial and temporal scope of analysis (Gamboa, 2003). They provide descriptions of possible future trajectories, developed in a structured way, with an internally consistent script based on the proposition "what if" (Gallopin *et al*., 1997; Alcamo, 2001; Raskin *et al*., 2002, Clayton *et al*., 2003). Scenarios are different from traditional predictions or projections, as they do not attempt to forecast the future, but they seek to be learning tools (Ghanadan, 2002). In this line, the value of scenarios is not their ability to predict the future, but its capacity to provide information about the present (Rothmans *et al*., 2000). Scenarios help identify the small signals that could drive significant changes tomorrow, the implications of these signals can be shredded and reflected (Ozkaynak, 2008). SMCE have been conducted to assess scenarios (Kowalski *et al*., 2009, Gamboa, 2003), although, the larger the divergence among scenarios, the weaker the comparability between them.

Scenarios are valuable tools for Íntag. Íntag future is embedded in a deep structural uncertainty not only related to a lack of information, but also to the impacts that ongoing and changing national and regional policies and projects are having or

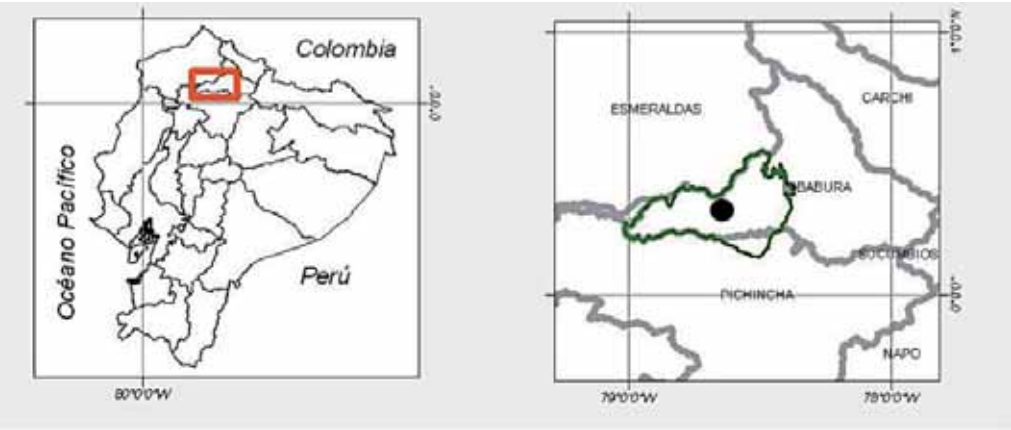
might have. Given the isolation and low population of Íntag, small changes can trigger deep transformations. Moreover, scenarios allows to consider the key features of an economic activity and the dynamics these trigger in the territory in the short and medium term.

In this paper we explore the potential of SMCE approaches to structure and assess the economic, socio-cultural and environmental implications of developing extractive and non-extractive local scenarios in Íntag according to the criteria that are relevant to Íntag inhabitants. Making scales, values and uncertainties -that have been hidden by hegemonic discourses- more visible.

Following this introduction, section 2 presents the background of Íntag mining conflict. Section 3 explains a) the institutional analysis conducted to characterise Íntag; b) the structuration of the assessment, including how two scenarios were built, one that considered the development of a large-scale mine and another the deployment of tourism activities in Íntag and, how the assessment criteria were defined. c) the results of the SMCE assessment process. In each stage we discus how the appraisal allowed to structure, make transparent the contentious and controversial aspects of Íntag possible futures. Section 4 concludes.

2. The Íntag mining conflict

Figure 10: Ecuador, Íntag and the Junin/Llurimagua mining concession



Source: based on Ecopar 2007

Íntag is an area that encompasses seven parishes belonging to the counties of Cotacachi and Otavalo located in the North of Ecuador and comprises two valleys (Íntag and Manduriacos) with an extension of 1500 km^2 with altitudes ranging from 800 to 4,000 m (Figure 10). With a subtropical weather, rainfall reaches 2,000 mm per year and a rich biodiversity can be found in its cloud forests (Asamblea de Unidad Cantonal, 2002). This area is characterised by steep mountains that make access and circulation difficult resulting in relative isolation and low population density. Íntag had 13,102 inhabitants in 2010, mostly mestizo (82.3%) although there are also Afro (6.6%) and Indigenous (5.7%) inhabitants (INEC, 2010). About 70% of the working age inhabitants are dedicated to agriculture and livestock activities. In the agro-pastoral land use in Íntag, sown pastures predominate, followed by the production of sugarcane, corn and beans. 90% of farmers dedicated a percentage of their production to self-consumption (Lopez, 2011). The dynamic cities of Cotacachi and Otavalo (renowned tourist destination) are located at 60 km meaning approximately 3 hours rough bus ride from Íntag main commercial parish, Apuela.

With the exception of the parish of Garcia Moreno, whose population grew at a 1.3% yearly rate between 1974 and 2010, there is a slight depopulation process in Íntag. Censuses indicate the out-migration of young people. This migration can respond both to the lack of options for secondary and higher education, as well as job seeking opportunities outside the region. The region has a low provision of services (clean domestic water, garbage collection, sewage, telephone lines), excepting for electricity (INEC, 2010).

The mining conflict addressed in this paper started in the mid 1990s, when local communities with the support of national and transnational organizations organized to oppose mining exploration activities conducted by Bishimetals, a Japanese company (subsidiary of Mitsubishi) in the parishes of García Moreno, Cuellaje and Peñaherrera (Bebbington, 2007). Exploration works signalled the presence of a possible deposit of 2.26 million tonnes of copper (and molybdenum) in the area. A key turning point in the conflict was the community access to an environmental impact assessment report (EIA). The document provided a description of the social and environmental impacts such as deforestation, climate changes and desertification processes, displacement of *100 families*, pollution of rivers and streams with heavy metals (lead, arsenic, chromium and cadmium) and impacts to the Cotacachi Cayapas neighbouring protected area (JICA, 1998). This information triggered social unrest, mobilizing local communities that

succeeded to expel the mining company from the area in 1997. In 2004, exploration activities were re-launched by the Canadian junior company Ascendant Copper that was also expelled by local communities in 2006 (Bebbington, 2007).

The Íntag mining conflict contributed to consolidate local organizations and initiatives that had the support of international organizations. The opposition to mining fostered the search for local development alternatives and activities such as the cultivation of organic coffee and commercialisation in fair trade markets (mainly Japan), fostering social organizations to introduce ecological practices in home gardens to ensure food sovereignty and peasant diet diversification, an ecotourism network in the region and an initiative to develop small scale hydropower plants.

In the 2013, Ecuador government re-launched the project, renamed as Llurimagua, and announced new exploration activities (ENAMI, 2013). This news arrived together with a national de-legitimation campaign against local anti-mining activists, including the reference to specific activist names and organizations of Íntag in the weekly president speech (Andes, 2013).

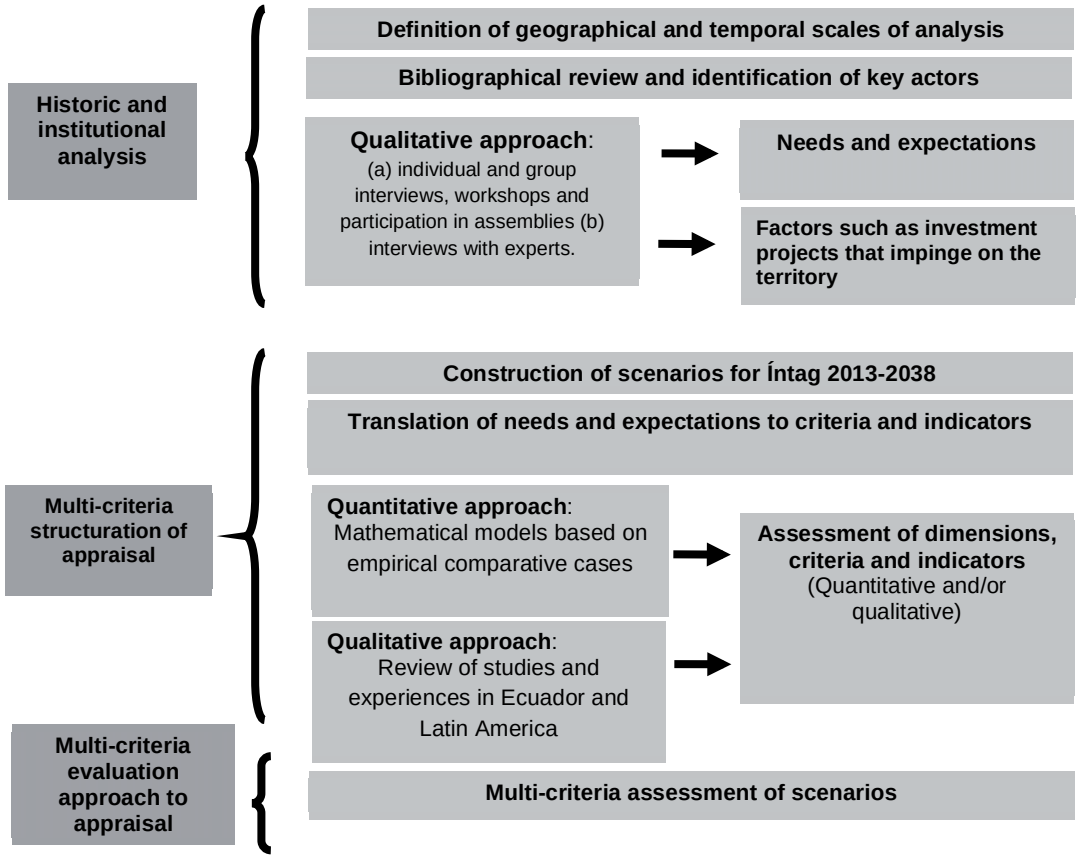
Currently the Ecuadorian government is promoting half a dozen open-cast mining projects in the country with increasing local unrest (OCMAL, 2013, Latorre and Herrera, 2014). In this vein, the relevance of the present study is not bound to a particular case but to many cases within and outside Ecuador where extractive activities are been promoted by governments without participation and using coercive measures to reduce critical voices.

3. A SMCE approach

3.1. Institutional Analysis: characterising and making visible the local scale

Figure 11 presents the main steps of the SMCE conducted in Íntag. The first step of the institutional analysis aimed to characterize the system and identify the main needs and expectations of Íntag inhabitants. Information was gathered and analysed regarding a) the social, economic, environmental, political and cultural features of Íntag and b) projects and economic activities that different local and non-local actors were promoting in Íntag. In this process, a map of key stakeholders was built, identifying their main values, interests, needs and expectations on the future of the region. This stage was also key in order to define the geographical and temporal boundaries of the system under study.

Figure 11: SMCE methodological steps



The (first two) authors of this paper lived in Íntag, from March to July 2010, and visited Íntag in several occasions in 2011-13. Participant observation techniques were used (Atkinson, et. al, 2003, Yin, 2014). These visits allowed them to get acquainted with Íntag parishes, participate in meetings, hold interviews with different actors and gather first hand information on infrastructures, transport, landscapes, social actors and their values, etc. Primary and secondary sources were collected. Studies and reports on Íntag produced by local or supra-local actors, newspaper articles and censuses were reviewed. Individual and group in-depth interviews were conducted with about 60 key informants at the local (organizations, governments, neighbours), regional and national scales (tourism, economy, mining, infrastructure departments and ministries; geologists, engineers, economists, social movements). In order to reach key actors that were not participating in the workshops and regional assemblies, personal interviews were

conducted. Moreover, a local workshop to present and discuss the main needs and expectations systematized in this stage was organized.

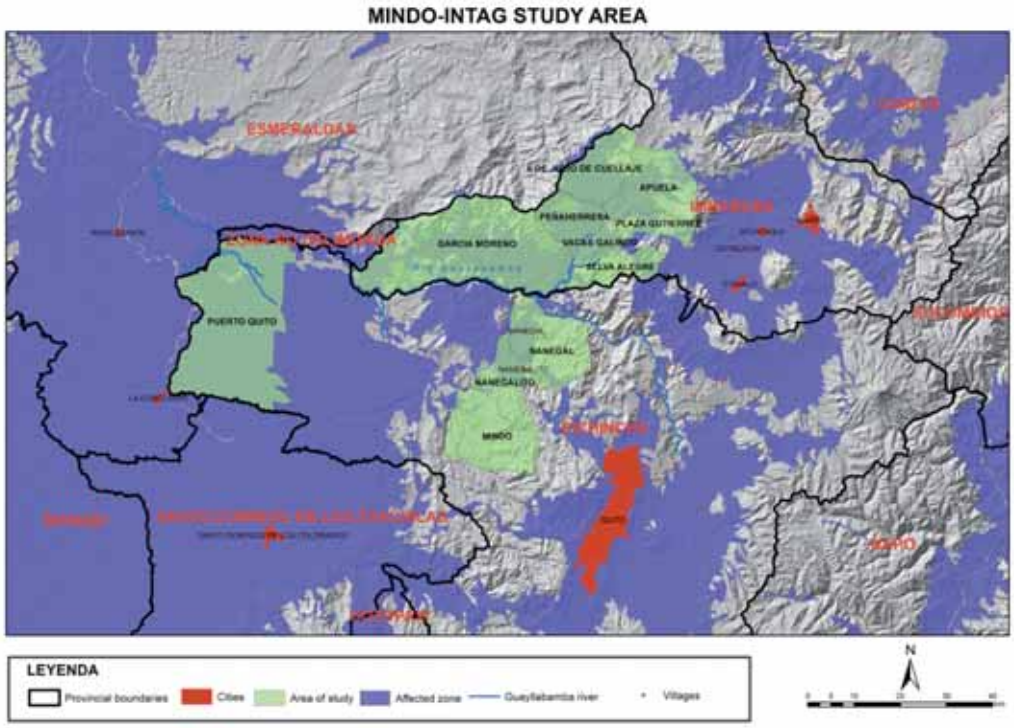
We adopted as scale of analysis the region of Íntag (Íntag and Manduriaco valleys) that responded to the boundaries given by Inteños to their territory and allowed to assess activities from a wider territorial perspective. Choosing Íntag (and not the narrow mining concession area) as scale of analysis contributed to make visible impacts and stakes which were relevant inputs in the social and political mining debate in question. Regarding the time frames, a long-term perspective was preferred, as this would allow to elicit the long-term financial, economic, social and environmental costs at stake, addressing one of the main concerns of some local actors. Nevertheless, Íntag future is embedded in a high structural uncertainty, and the longer the time frame adopted, the more blurred the images of the future. Íntag future is entrenched in uncertainties, which are not only related to the level of information available but also to the way incoming decisions and policies will shape the interactions between Íntag, Ecuador and the world. A compromise was made between time extension, quality and usefulness of results. We adopted for a 25 years time span that allowed to analyse the key stages of the life cycle of the main activities analysed.

All this provided the ground to structure the multicriteria appraisal identifying its main actors, illuminating their needs and expectations regarding the present and the future, as their activities and projects. This stage clarified the availability and quality of information, as the main uncertainties at play.

3.2 . Structuring the Multi-criteria appraisal

3.2.1 Territorial Scenarios

Figure 12. Íntag, Mindo and Puerto Quito areas of study



Source: own elaboration

We used different sources of information to build Íntag scenarios. Data gathered during the institutional analysis allowed us to identify the main activities developed and desired by local actors. We assessed the main (existing and potential, bottom-up and top-down) economic activities in Íntag, their features, compatibility, level of development and time-scales. Interviews were conducted with key government and non-government actors. When the main activities to be assessed were defined, we conducted a review of relevant cases and experiences from Latin America. We built scenarios that were based on an extrapolation of the (demographic and economic) dynamics of comparable experiences.

In order to structure, make transparent, and contribute to open up the mining debate, two scenarios were built. These are not the only possible scenarios, nor necessarily the most probable. These scenarios assessed two key activities in tension in Íntag and their implications. The deployment of these activities was possible and had the support of different social groups. The first scenario addressed the implications of developing the mine and was structured around the question: what would happen if the economic and technical feasibility of exploiting a large-scale copper mineral deposit

located in Junin/Llurimagua was confirmed and exploitation started in the short term? This scenario addressed key expectations and concerns in the mining conflict.

To build the second scenario we assessed a wide range of activities that were or could be developed in Íntag, their features and social support. We decided to build a scenario that assessed the implications of developing ecotourism (combined with agro and recreational tourism) in Íntag, addressing the question: what would happen if Íntag developed its tourism potential? Tourism was a growing and highly valued activity in Íntag, by both civil society and political actors (field work 2011). Tourism was being actively promoted and supported by local organizations as an alternative to mining that was based on the *mise en valeur* and protection of Íntag ecosystems and biodiversity. Furthermore, tourism activities were promoted as an approach to tackle one of the most concerning trends the out-migration of young people in search of employment opportunities, as the young express their interest in this activity and have currently a leading role in its promotion in Íntag.

In this vein, the objective of these two scenarios was to structure and make transparent the wider territorial implications of developing two activities (mining or tourism) that reflect two contrasting narratives that were in tension in the territory. By this approach, we aimed at disentangling the key economic, social and environmental outcomes of each scenario, acknowledging risks and uncertainties. Analysing each activity separately from others allowed to unravel their implications, facilitating comparison and addressing some of the key concerns and debates that were at the roots of the Íntag mining conflict.

Furthermore, these were competing scenarios that cannot fully co-exist. Developing a large-scale copper mine in a cloud forest area, buffer zone of a Natural Protected area, undermines the medium and long-term capacity of this area to deploy nature-based tourism anchored on the quality and availability of ecosystems. We are not claiming that mining activities cannot coexist with some touristic activities at the regional level, however we hold that in a mining scenario, tourism is not likely to have a significant role.

3.2.1.1 Demographic baseline

Both scenarios entailed the completion of the Otavalo-Quinindé route that crosses Íntag improving its connection with coastal and highland urban centers. Íntag censuses (INEC, 2010) indicated a slow depopulation trend, however the construction

of a route could trigger *per se* significant changes in current demographic dynamics. We analysed a comparable case in Ecuador, the case of the canton of Puerto Quito, located at the western corner of the Pichincha province, at a lower high (400 m.o.s.l.) and with easy slopes (Figure 12). During the 1970s this area became connected to the coast and the highlands markets. This triggered demographic and economic changes as well as higher deforestation rates. Analysing the economic censuses series, we concluded that the construction of the route would foster a 1.6% yearly population growth rate for Íntag. This provided a demographic baseline for the mining scenario.

3.2.1.2 Tourism scenario

This scenario is consistent with the international growth of nature-related tourism to Ecuador. According to the World Economic Forum (2011), between 1995 and 2009, the arrival of international tourist to Ecuador grew 6.1 % per year. Over the next decade, tourism is expected to grow at a 4.4% per year and the employment in this branch at a 2.6 % per year. However, we note that modelling the possible growth of a subaltern region in Ecuador is complex and depends on many variables that are difficult to predict, such as the future growth of the national economy, local investments, human and natural resources.

To cope with the high levels of complexity and uncertainty of this scenario, we based it on the experience of a nearby region that shared key environmental and demographic features and went through a comparable tourism specialization process. The parish of Mindo (Pichincha province) has a similar ecosystem (subtropical cloud forest) and two decades ago experienced the opening of a main road (Calacalí - Quito – Esmeraldas), a process that is comparable to the imminent opening of a road in Íntag. This area, located in the North of Pichincha, underwent in the 1970s a process of rapid expansion of the agricultural frontier and deforestation. However, more recently the micro-region of Mindo turned into the promotion of ecotourism and adventure tourism, benefiting from the remaining cloud forest biodiversity (walking paths, birds, butterflies, plants).

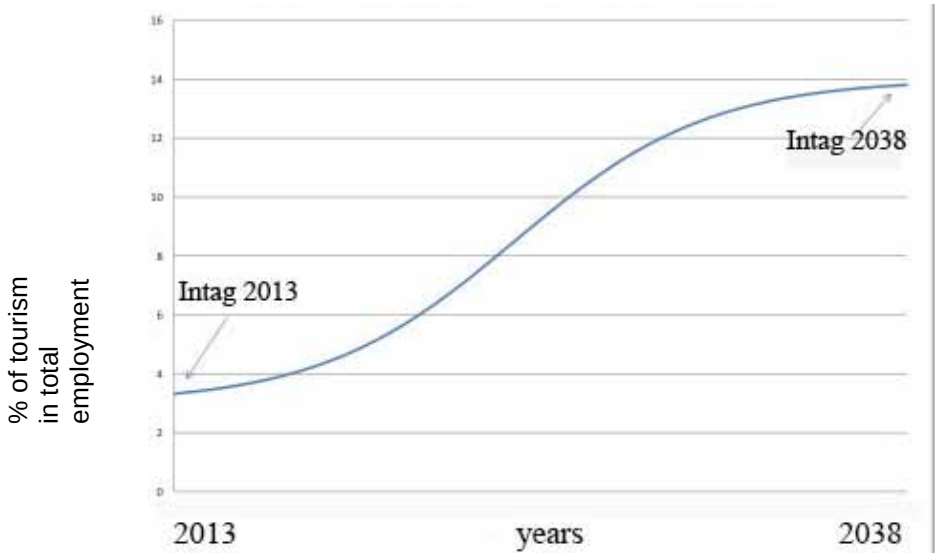
In order to assess the comparability and then build a scenario for Íntag based on the experience of Mindo, we studied the demographic and economic features of Mindo and its surrounding area, including the parishes of Mindo, Nanegalito, Nanegal (Figure 12). Including these parishes allowed us to assess a comparable area to Íntag in terms of

population and geographical extension. We analysed population censuses (1974, 1982, 1990, 2001 and 2010) and the 2010 economic census for the region of Mindo and Íntag.

Based on Mindo process, we projected the evolution of Íntag population growth assuming similar trends than those experienced in the region of Mindo during last decade (2.7% annual growth). These quantitative estimations were supplemented with a review of studies on the economic, socio-cultural and environmental impacts of tourism in Mindo.

Moreover, a study was also conducted in order to assess the changes that tourism triggered in Mindo economy and employment. We concluded that tourism occupies around 14% of the working age population of Mindo currently (INEC, 2010) while in the case of Íntag this figure is only around 3% (INEC, 2010). We projected a 25 years evolution from a situation with Íntag current features (year 0) to a situation similar to Mindo (year 25). Figure 13 presents the evolution projected, according to which tourism employment is gradually takes off over time reaching a "saturation" or stabilization stage near 2038.

Figure 13: Employment in tourism: logistic function of convergence from Íntag to a similar region to Mindo (2013-2038)



Source: own elaboration.

There are however some relevant differences between Íntag and Mindo. Although both regions have high levels of deforestation, these are currently higher in Íntag. In this vein, if a long-term scenario based on tourism is desired measures should

be taken to contain the advance of deforestation. There were also differences in terms of social capital. Íntag has shown a remarkable capacity to mobilize resources and promote initiatives during the past 15 years, which was not the case in Mindo when the development of tourism occurred, suggesting an opportunity to learn and improve the experience in Íntag.

3.2.2.3 Mining scenario

There is no precedent of large-scale industrial ore mining activities in Ecuador. The possibility of a copper and molybdenum mine in Junín was studied by the Bishimetals in the 1990s, that signalled a possible deposit in the parishes of Garcia Moreno and Peñaherrera. The best available information on Junin/Llurimagua ore deposit was generated by the Japanese cooperation (JICA) that inferred reserves of 318 million tons of ore with a copper grade of 0,71 %, about 2,26 million tons of copper (JICA, 1998). Copper was the main mineral, but secondary minerals such as molybdenum, gold and silver were also identified. The JICA also produced an EIA that characterised the main features and impacts of a potential mine. The report signalled that the deposit was in association with lead, arsenic, cadmium and chromium and minerals related to the formation of acid mine drainages (AMD). This EIA provided valuable information to assess the environmental impacts of this possible mine (JICA, 1996).

In order to build a mining scenario, key decision had to be made regarding the size of the deposit used to calculate the benefits, rents and job opportunities. There is usually a significant distance between the initial estimations and what is finally economically and technically feasible to exploit. Moreover, the particular fiscal features of each country also affect these decisions. We reviewed copper mining projects (past, present or future projects) in Ecuador and Latin America, searching for a project with a viable cost-benefit structure and job generation information that would be comparable to the potential Junín/Llurimagua mine in order to conduct an (adjusted) extrapolation.

We decided to use as case of reference the first large-scale copper mine approved to start operation in Ecuador: Cóndor Mirador project. Cóndor Mirador mine, owned by the Chinese company Ecuacorrientes resources S.A. (ECSA), is located in the Cóndor mountain range in the province of Zamora Chinchipe, near the border with Peru. The project seeks to extract 181 million tonnes of ore with an average grade of 0.62 % copper, 0.2 g/t gold and 1.6 g/t silver. The project has an expected duration of

17 years with a daily extraction rate of 30,000 tons of ore (Walsh, 2010). While in initial studies the deposit was estimated at 437 million tonnes of copper at a grade of 0.61 % with a cut-off grade of 0.4 % (MDA, 2006), to keep capital costs low and reduce infrastructure costs, the exploitation was reduced to 181 million tons (Walsh, 2010). This means that there are uncertainties not only regarding the characteristics of a deposit in its early stages of exploration, but also regarding the economic and technical criteria and cost estimation used to design the final features of the mine.

Cóndor Mirador mine has some advantages and disadvantages as a possible case of reference for Íntag. Among the advantages, it is an approved project in Ecuador. Hence, it provides an example of a viable project that considers cost-benefit and fiscal calculations fitting Ecuadorian regulations. Moreover, it provides a practical example of current government environmental protection standards. Furthermore, the mine is located in a cloud forest steep area, with heavy rainfall, high biodiversity, low population density with low levels of formal education and bad connection to nearby cities. These features resemble Junín/Llurimagua area. Both ECSA and Junín/Llurimagua require large investments to build the infrastructures to access and mine metal ores (bridges, roads, waste management facilities, etc.), and have similar problems regarding high rainfall and limited opportunities to hire local workforce. Both Cóndor Mirador and Junín/Llurimagua projects share the main metal: copper. However, while both deposits have quantities of gold and silver, their amounts in Junín remain unknown. These precious metals could alter the economic balance and final design of a mine in Junín. An important difference is that Cóndor Mirador project overlaps with indigenous territories.

The point is not that Junín/Llurimagua mine will be like Cóndor Mirador, not even that it is a viable mine, it might not. But, Cóndor Mirador is a valuable case to discuss the implications of developing a large-scale mine in a comparable environmental and social context in Ecuador. Therefore, without underestimating the high uncertainty regarding the feasibility of Junín/Llurimagua mine, in order to contribute to the debate on the implications of running a medium-large copper mine in Íntag, an economic and social scenario was built based on the Cóndor Mirador project.

The tourism and mining scenarios were built for the period 2013-2038. In order to have scenarios that would allow for comparison and discussion, in year 1 (2013), both scenarios start to deploy the assessed activities. In the case of tourism, using as model the Mindo experience, we projected the deployment of tourism investments and

the gradual growth of the activity. In the case of the mining scenario, we assumed that the copper mine started its construction activities, following the exploitation timeline of Cóndor Mirador mine (Walsh, 2010).

3.2.2. Evaluation Criteria

Defining the dimensions and criteria of the assessment is a key step in a SMCE. It is the result of a translation process that aims to reduce the complexity and redundancy of the needs and expectations of local actors providing operative criteria for evaluation. In this vein, the appraisal process was structured in relation to local concerns, making visible this scaling frame and its particular approach to the mining debate.

Table 3 presents the views of key actors in Íntag conflict. Needs and expectations were complemented with local workshops, participation in local meetings and assemblies and field-work.

Table 3: Socio-economic actors, scale of action and their positioning regarding Íntag needs (2011)

Scale	Social actor	Position regarding Íntag needs and potentials
National	Ecuadorian Government (Alianza País; 2007-ongoing)	The national government can declare mining (and hydropower) projects as a national priority over other activities. They promote large-scale metal ore mining as a necessary source of income and development to national and local economies. Mining is seen as source of direct and indirect jobs for Ecuadorians. State-of the art technologies are proposed as the solution to avoid environmental impacts. In his weekly Saturday speech (*sabatina*), the President of Ecuador has denounced Íntag anti-mining activists to lead a boycott against this activity.
	Ecuador Estratégico	This new public company was created to coordinate the investments related to mining royalty and rents in the mining areas of influence. These investments are prioritizing the improvement of basic infrastructures and services. Mining activities are seen as a driver to improve local livelihood.
	ENAMI (National Mining company)	Junin/Llurimagua mining project belongs to the ENAMI and there is an agreement with CODELCO (Chilean public mining company) to explore and exploit the deposit, if feasible. Mining is seen as an opportunity for local development and job generation.
National-Prov.	SENPLADES (National planning secretary)	This secretary and its regional offices were in charge of promoting national and regional participatory planning processes. Regional plans signal as the main desired activities for Íntag: mining, hydroelectricity and agriculture. According to SENPLADES national planning document tourism was also a desired activity.
Provincial	Imbabura Government (Alianza País, 2009-2014)	Mining activities are seen as a necessary activity for the country and provincial development in line with the National discourse.
Municipal (Cantón)	Cotacachi Municipality (Alianza País; 2009-2014)	Contrarily to the previous municipal government, the new administration promoted mining activities in line with the national government discourse. This fostered negative changes in the relation with the AUC and social organizations, particularly those of Íntag. The Municipality saw tourism as a desired activity and was creating a Municipal tourism company.

Municipal (Cantón)	Asamblea de Unidad Cantonal (AUC)	Created in 1997 during the mayoral service of Auki Tituaña, the first indigenous mayor in the history of the municipality of Cotacachi. The AUC aimed to foster a process of local governance based on participative democracy, promoting the formation of diverse organizations, committees and assemblies. As a part of this process, several grassroots organizations (e.g. youth and women) were formed. The AUC has a Committee of Environmental Management that played a key role in launching awareness campaigns regarding the consequences of large-scale mining, reforestation projects, environmental education programmes and designating certain areas as water reserves. The AUC also passed an ordinance that designated this county as "Ecological". Several planning documents developed by the AUC identified the need to improve health, education, transport and basic infrastructures, productive and intermediation capacities, expressing an opposition to mining activities and a desire to boost agriculture, cattle, tourism and small-hydropower activities.
Local	Apuela parish (Movimiento Poder Ciudadano, 2009-2014)	This is the main commercial parish of Íntag and is governed in alliance with Alianza País. This administration saw the need to reactivate the local economy, reduce the migration of youth and families and poverty levels with more private investment and employment opportunities. Mining activities and hydroelectricity projects were seen as key potentials. There were concerns that mining activities could have environmental impacts or affect the local tranquillity with increase insecurity and prostitutions, however the urgency to generate jobs and promote local development were seen as a priority. Tourism was also seen as a positive activity, but requiring an improvement of road accesses.
	Peñaherrera parish (MVS 2009-2014)	With two consecutive administrations of an independent party, this local administration opposed mining activities. The parish managed, with local organizations, a centre of thermal waters that attracts local and regional tourists. Tourism, agriculture and cattle activities, small-scale hydropower activities were seen as the bases of a sustainable development.
	García Moreno parish (Pachacutik, 2009-2014)	This is the larger and most dynamic parish of Íntag. This parish has an operative medium-scale underground gold mine. The president of the parish pointed to denounces of neighbouring communities of negative environmental impacts and health problems and signaled the low social benefits (minimum salary, low local investment) related to this mine. The Junin/Llurimaguas mining project and other large-scale hydropower projects promoted by the national government are located in this parish. The administration expressed an opposition to mining activities for its negative environmental impacts. Hydropower projects were seen as positive as long as local jobs were created, and there was an agreed distribution and investment of the benefits of this activity. The development of agriculture, cattle and tourism related to ecosystems was desired. The president pointed to the need to improve the quality of roads to improve the ability of local producers to sell their products, to education, health services and water infrastructures. Pointed to the high poverty levels and the need to foster local development and investments. There were concerns of illegal logging activities.
	Vacas Galindo parish (Alianza País, 2009-2014)	The president identified the need to reactivate the economy of the region and reduce out-migration rates with more private investments, companies and job opportunities. Mining activities were seen as an opportunity. Without good roads tourism was not seen as a viable alternative. Agriculture was not seen as good business.
	Selva Alegre parish (2009-2014)	This parish has two mines of construction materials that have been active for more than 2 decades. These mines employed a small number of local inhabitants, given a lack of local capabilities and have not generated royalty-related incomes or investments to the local administration. Environmental impacts of these mines have not been mitigated. There are concerns that this example will be replicated in Junin/Llurimagua project. Tourism related to local communities and forest conservation were desired. The administration pointed to deficiencies in health and education services and the need to improve the access of local producers to markets to sell local production.
	Plaza Gutiérrez parish (Alianza País, 2009-2014)	The parish pointed to the need to reactivate the regional economy to reduce migration, the lack of employment and poverty rates. Identified the need to boost private investments and the arrival or private companies. If the government promotes the Junin/llurimagua project it is seen as inevitable. Tourism activities were seen as potential source of jobs for youth, although not necessarily compatible with mining.
	Cuellaje parish (Alianza País)	A young parish with dynamic agricultural activities. There were concerns regarding illegal logging and the need to foster employment opportunities. Tourism was seen as a desired activity to generate jobs and improve conservation. There was no opposition to mining activities, but if these were developed, advanced technologies able to prevent environmental degradation were expected. Improvement of education and health services was needed.
	Toisán Consortium (TC)	A network of 12 organizations that aim to improve the coordination of local organizations, and improve local capabilities and synergies to promote local sustainable development. Their organizations work on productive (organic fair trade coffee, organic agriculture, handicraft), economic (eco-tourism, value added processes, local consumption campaigns, small-scale hydropower projects), commercialization (improved intermediation and financial support), social (youth, woman organizations) and environmental (forest conservation) activities. There were concerns regarding the reactivation of the Junin/Llurimagua project. Distrust on the ability of governments to control the short and long-term mining impacts. TC leads the opposition to mining in Íntag, arguing that little jobs will be created, women will be negatively affected, negative social changes will be triggered (e.g. less safety, prostitution, health problems) and environmental impacts will affect forests, biodiversity, water quality and availability among other serious impacts.
	Talleres del Gran Valle	This is a grassroots organization located in the Manduriacos valley, which aims to enhance peasants' market and commodity options, by the promotion of fair trade marketing channels and manufactured products. It was created, in part, to consolidate alternative economic options to mining. They work with the TC.
	Asociación Productores Café Íntag (APCI)	Formed in el 2008 by pro-mining local actors as an alternative to the AACRI (Association of coffee producers related to the TC), they buy locally produced coffee and commercialize it.
Local-International	PRODECI (Pro-derechos Ciudadano)	Since 1997, Ayuda en Acción, from the Spanish cooperation works in the area. In 2005, Prodeci is created as a local counterpart that promotes productive activities, basic services, education, tourism and the strengthening of local organizations. While it has not an open position regarding mining activities, their personnel work closely with TC and is supportive of tourism activities.
Municipal-local	HidroÍntag	Íntag project for energy generation by small hydro-power plants developed by Toisán Consortium (TC). The project aimed to be managed as a consortium composed by TC, Íntag parishes and the Municipality. The initiative was developed as an alternative source of income for local economies. Benefits were to be reinvested in local production capacities and conservation.

Note: in February 2014 there were local elections in Ecuador. In the Municipality of Cotacachi and the parishes of Apuela, Cuellaje, Plaza Gutierrez and Vacas Galindo candidates critical to mining activities won. The president of Parish of García Moreno was re-elected with a moderation of the anti-mining discourse. The new mayor of Cotacachi (coalition of the Vivir Bien and Avanza parties) is a former technician of the AUC. The new elected president of Imbabura province is also a member of the political party Avanza, and has already expressed a position against the development of mining activities in the province.

The institutional analysis stage identified key aspects of what was valued, which were the main expectations and concerns of *Inteños*. Among some key points we highlight a deficit in the provision of basic services and infrastructures, concerns regarding the out-migration of youth and students, the lack of employment and job opportunities, the need to promote long-term environmentally and socially sustainable activities, promote synergies among local activities and protect remaining forests. Also, there was a high valuation of the tranquil lifestyle, strong community ties and the access to a healthy environment. These needs and expectations were systematized and discussed by an interdisciplinary group that proposed a first list of assessment criteria.

Table 4 presents a summary of the dimensions, key needs and expectations and how these were assessed. Three dimensions were defined: socio-economic, socio-cultural and environmental. The socio-economic dimension was assessed with 4 criteria that accounted for key concerns and expectations in Íntag and also some of the main arguments deployed in favour of mining activities at the national scale (e.g. indirect job, fiscal income). The socio-cultural and environmental dimensions were assessed differently. Given the diverging features of the activities and their impacts, and in order to contribute to disentangle and make transparent the key implications of each scenario, we conducted a general review pointing to the main impacts and risks. Therefore, indicators were not used to assess these two dimensions. Two workshops were conducted in Íntag (with local organizations and inhabitants) and one in Quito (with economists, anthropologists, sociologists and environmental scientist) to discuss and adjust these definitions.

Table 4: Dimensions, Needs and Expectations and assessment criteria

	Criteria	Key Need & Expectations	Assessment approach
Socio-economic Dimension	Fiscal (& royalty) income to national and local governments and its impact in local development	There were expectations and concerns regarding the size of the tax and royalties revenues that could be generated by a large-scale copper mine. In particular, considering what impact could this income have on local livelihoods, infrastructure. This was a sensitive point in the local and national mining debate	Fiscal (& royalty) incomes to local and national governments were estimated for 25 years. The potential impact in the local economy was assessed qualitatively reviewing recent experiences in Latin America.
	Local employment covered by local workforce	There were concerns regarding the generation of work opportunities in total and for locals. In particular, considering the trends regarding the out-migration of young and families to other regions and countries.	We quantified the generation of total and local employment opportunities for the main activities of each scenario.
	Gender balance in direct employment opportunities.	There were concerns and expectations regarding the generation of work opportunities for women, especially in a mining scenario.	We assessed the percentage of jobs that could be covered by women and men in mining and tourism activities.
	Indirect employment and production linkages	There were expectations of activities able to promote the dynamism of economies, the boost of sustainable productive activities, synergies among activities and growth in the aggregated value of local products. Expectations of activities that would increase the consumption of local products improving the income of families and local producers. Expectations and concerns regarding the generation of productive linkages and indirect employment opportunities for locals in a mining scenario.	We assessed quantitatively the number of indirect jobs of mining and tourism activities in each scenario. We assessed qualitatively the production linkages of mining and tourism activities reviewing cases in Ecuador and Latin America.
Socio-cultural Dimension	Socio-cultural impacts	There were concerns regarding changes in the tranquility, low crime level, scale of life, social ties, relation with surrounding environment and capacity to produce own food. The relocation of families in a mining scenario. Concerns regarding the disempowerment of local organizations and the productive alternatives these promote. Mining activities rose concerns regarding the in-migration of men, increase in prostitution, alcoholism and sexual diseases such as AIDS.	For each scenario, we reviewed, identified and discussed their key socio-cultural impacts. We reviewed Latin American local experiences.
Environmental Dimension	Environmental impacts	Key dimension in the mining conflict that concentrates some of the main local concerns. There were concerns regarding changes in the quality and availability of underground and surface waters. Water pollution by acid drainages and metals. Concerns regarding deforestation and biodiversity impacts. Lack of state capacity to effectively control and prevent environmental impacts of mining activities. Impacts in landscape, air, soil and noises (such as those of increased circulation of large trucks or mining explosions) Concerns on the short and long time scale about impacts on local livelihoods and local productive activities dependent on the environment such as agriculture or eco-tourism.	For each scenario, we reviewed, identified and discussed their key environmental impacts. We reviewed relevant studies and cases of Ecuadorian, Latin American and international experiences.

Each dimension and criteria are assessed in the following sections.

3.3. SMCE assessment

This stage aimed to assess the economic, socio-cultural and environmental performances of each scenario during 25 years (2013-2038). Each dimension and criteria required a particular approach, examination and disciplinary expertise. We present the key methods used to assess each dimension and criteria. And discuss how these approaches coped with uncertainty and allowed to make transparent key implications of each scenario, providing valuable contributions for on-going debates on Íntag possible futures.

3.3.1. Socio-economic dimension

3.3.1.1 Fiscal (& royalty) income to national and local governments and its impact in local development

The ability of mining activities to generate royalties and fiscal incomes was a key argument of mining proponents and was a central issue of debate in mining conflicts. We aim to address and make transparent different features of this matter. Firstly, we provide a quantitative estimation of the possible fiscal income that could be generated to national and local governments and discuss the medium and long-term characteristics of this income, referring, for instance, to long-term considerations regarding the environmental costs related to mining activities. Secondly, as this study aimed to address Íntag perspectives, we explored the implications of fiscal income increase from a local perspective. This was particularly significant in the mining scenario, as Íntag inhabitants were not only concerned with the capacity of mining activities to improve state incomes, but, in particular, with its particular impact on their local livelihoods.

The use of extrapolation techniques and review of research of Latin American experiences was key in this and other criteria. This approach allowed us to cope with the high structural uncertainty of Íntag future and structure a debate based on informative experiences.

Tourism scenario. While in a mining scenario we considered a single project, estimating the revenues generated and taxes paid by tourism is more complex. Tourism is not an activity *per se* in Ecuadorian national accounts, but it is the sum of different activities (transport, hotels, museums, other businesses, travel agencies) that are not 100% dedicated to tourism. The SMCE research team analysed the first national

satellite accounts for tourism in Ecuador (Ministry of Tourism, 2011) and the 2010 economic census of the *canton* Los Bancos, containing Mindo area, (CNEC, 2010). We identified "hotels and restaurants" as the main income-generating sector of tourism for Mindo. We decided to focus our calculations on "hotels and restaurants" activities in order to estimate the fiscal income generation of this central tourism activity during 25 years.

Mindo concentrates 90% of the establishments dedicated to tourism in *canton* Los Bancos (CNEC, 2010). We analysed the income, expenditures, taxes and labour requirements of the "hotel and restaurants" sector in Mindo[24]. We built a typology of four main business sizes according to their level of activity and investments. We identified the most profitable business type generating around 2.42 direct jobs and requiring an initial investment of 17,857 US$. Moreover, we complemented the economic census reviewing and estimating municipal and national fiscal burdens for this activity.

Based on our projections on population growth and the evolution of its working age population dedicated to tourism (see section 3.2.1.2), we estimated how many businesses would be necessary to employ 90% of Íntag tourism workers. With the number of businesses we were able to have an estimated evolution of fiscal revenues for local and national governments. This was, however, an incomplete picture of the fiscal generation related to tourism activities, particularly at the national level because there are other revenues generated outside hotels. Table 3 presents the fiscal income estimations.

Finally, we would like to point that a tourism scenario facilitates the development of other activities that require the protection of ecosystems. For instance, Íntag organizations are developing a project to construct a series of small hydro-electricity plants that according to our estimations could generate, in 25 years, an aggregated fiscal revenues of about 30,116,573 US$ (VAT and rent taxes) and 357,406 US$ (municipal taxes) to national and municipal governments (more details in Larrea *et al*., in press). Other activities such as agro-tourism or fair trade coffee exports could also be considered. These and other activities compose an ensemble of activities that local organizations desire to boost in an non-extractive scenario.

[24] With the collaboration of an Ecuadorian experienced consultant (Joaquín Paguay).

Mining scenario. A review was conducted on royalties and taxes applied to mining activities, in particular to the Cóndor Mirador project (regulations, laws, mining contract). Moreover, interviews were conducted with the Ecuadorian mining regulatory agency, the Ministry of non-renewable natural resources and public mining company (ENAMI). Based on recommendations obtained through interviewed government officials, calculations were made with a copper price of US$ 2.07/pound.

Table 3 presents the estimated fiscal income that could be generated at the local and national scales. However, mining royalties in theory available to local governments are not directly transferred to them, cannot be used to expand local bureaucracies, neither will they be necessarily fully invested in the direct area of influence of mining projects. When this study was in development, regulatory definitions were in motion (e.g. Executive Decree Nº1135, May 9 2012). There were concerns regarding the ability of local governments to effectively and properly invest mining royalties. A National company (*Ecuador Estratégico*) was created to coordinate the investment of mining royalties in mining areas of influence. We note that, currently, if the share of royalties collected each year for mining areas of influence is not spent (or reserved as part of a multi-year initiative), it cannot be accumulated for subsequent years, and it is transferred to the national state budget. This implies that the availability of mining royalties, locally, is tied to the active extraction of minerals. This also indicates that the capabilities (technicians, management expertise) of local and national bodies to elaborate and execute projects will play a central role in the ability of the local scale to capture these rent-related investments.

Criteria discussion

Table 5: Estimation of fiscal and royalties income in each scenario

Local/National Scale	Scenario		Concept	Total current income, not actualized (2013-2038)
National Income	Tourism	Direct Transfer	Income tax (22%)	55,066,570
			VAT (12%)	30,437,227
	Total			**85,503,797**
	Mining**	Royalties*	40% of total royalties	80,800,000
		Direct Transfer	Income tax (22%)	78,980,000
			VAT (12%)	243,000,000
	Total			**402,780,000**
Local Income	Tourism	Direct Transfer	Municipal and companies tax	323,785
	Total			**323,785**
	Mining	Available royalties*	60% of total royalties	121,200,000
		Direct Transfer	Municipal Patent and fireman tax	1,000,000
			Rural land property tax	832,000,000
			Fixed assets	4,000,000
		Total		**958,200,000**
		Funds available to National and Local levels	Participation (12 % of profits)***	43,080,000

Note: *Based on the Cóndor Mirador contract (Contract, 2012). Royalties are estimated as 6% of the net income of primary and secondary minerals sold (gross income minus transport and refining costs). ** Besides these estimations, there is an overall "sovereign adjustment" that aims to ensure that the State earns no less than 51% of total profits. *** The participation in profits of workers and the State varies if the company is private, public or a mixed. We considered a public company such as CODELCO-ENAMI project (12% for State). A private company should also pay for an additional 3% for workers.

During 25 years, mining activities would generate more aggregated tax revenues than tourism, 4 and 800 times larger at the national and local levels, respectively (table 3). We note that local income in the mining scenario is the "maximum" available, not necessarily that effectively invested. These results are not surprising since the specific features of each activity fiscal-burden has substantial differences. We underline some issues that are relevant to discuss and compare scenarios:

-**The particular features of tourism and mining activities.** The mining scenario entails a large-scale enclave activity with a limited duration of time, with a large initial investment that could generate a large amount of royalties and tax revenues during 17 years. Tourism has a different dynamic, it deploys more gradually and develops for an undefined time period. Hence, the longer the time frames adopted to estimate fiscal incomes, the greater the performance of tourism over mining activities.

-**Quantity and quality of information**. There are significant differences in the information available for each scenario. For a specific project, such as a large-scale mining project, there are usually elaborated economic and financial estimates although these studies are not always made available to the public. In the case of tourism, tax revenues are not easy to estimate since this activity is not a single sector, but integrates a wide range of activities. Moreover, these activities are developed inside and outside the specific touristic area. This study only quantified fiscal incomes related to the sector of hotels and restaurants in Íntag. Therefore, in addition to the particular dynamics of each scenario, there is an estimation bias favouring the mining scenario in our study.

-**Long-term costs**. The long-term risks to trigger environmental and public health impacts and environmental liabilities, their reversibility and remediation costs, differ greatly among scenarios. Research points to the relevance of remediation costs during both the period of operation (eg. accidents, management) and post closure of large-scale metal mines. These risks and costs have been highlighted in mines with acid drainage (AMD) potential. AMD can impact underground and surface water quality that exceeds the productive life of a mine and even increases with time (Kuipers *et al*., 2006). Cóndor Mirador and Junín/Llurimagua studies signal the presence of minerals related to AMD (Walsh, 2010, JICA 1996).

According to inquiries made to the Ministry of Environment of Ecuador and to the mining environmental regulation (Presidential Decree No121, 2011), private mining projects must provide an environmental management plan and deliver an environmental financial warranty (*garantía de responsabilidad civil y de fiel cumplimiento*). This warranty is renewed annually and equals the annual investment budget of the project. It is at disposal of the national government in case of environmental liabilities (Presidential Decree No. 121). Cóndor Mirador development plan has an approved

budget for its last year of operation of 5.5 million US$, the estimated funds available as warranty according to current estimations (Walsh, 2010).

Studies conducted in the U.S. signal that insurance coverage has often been insufficient to handle the full environmental liabilities costs of metal mines (United States Government Accountability Office, 2011: 8). It was estimated that the insurance amounts needed to fund mining environmental remediation were underestimated by 50 per cent to 10,000 per cent (Kuipers, 2003). The estimated remediation cost of the ten mines with the larger environmental liabilities in US varied between 300 million US$ and 1.35 billion US$ (Kuiper, 2003). Furthermore, metal price fluctuation, or unexpected costs could lead to a mine bankruptcy or abandonment, leaving the costs of closure to the State. U.S. organizations estimate that there are about 500,000 abandoned mines in this country with an estimated cost of remediation of between 32 and 72 billion dollars pending on the State (Earthworks , 2013a, b).

A global fiscal balance might also consider other relevant and socially costly liabilities such as the increased in short and long-term public health costs. Most studies on mining activities and health focus on mining workers. Less attention has been given to public health costs. According to the environmental agency of the United States (EPA), metal mining is the first source of toxic substances to atmosphere in that country. In 2011, 46% of toxic compounds were generated by metal mining (EPA, 2013). A study in the Peruvian Andes estimated that the probability -estimated with a household survey- of an urban family in a mining district to have a family member with a chronic illness more than doubled that of a home in a non-mining area (Zegarra *et al*., 2007). The study also concluded that the probability that a household member in a mining district suffered an acute disease was 63% higher than that in non-mining district households. These results suggest that metal mining activities have negative impacts in the health of households located in mining areas of influence. This is not meant to be an exhaustive list or future costs, but to illustrate the magnitude of these costs, hence the significance of long-term cost-benefits considerations for the state.

-Local impact. From Íntag perspective certain issues remain unsolved with Table 3 estimations. What amount of mining royalties will be allocated and invested in Íntag? What type of investments will be made (infrastructure, human capabilities, production capacities, etc.)? Who and how will benefit? What will be the medium and long-term impact of these investments? In order to address these local concerns and interrogations,

and given the high uncertainty regarding what could be the specific experience in Íntag, we reviewed quantitative and qualitative studies conducted in Latin America on the local impact of mining royalty. Structuring the debate around real experiences and scientific studies in other LA regions, allowed to avoid speculation and criticism of bias, opening up discussions on this poorly discussed matter.

The review concluded that the availability of mineral royalties does not guarantee, alone, growth and improvement of living conditions at the community level. Some of the key conclusions of the reviewed studies were that the availability of mining royalties do not imply a positive impact in the development of local economies or wellbeing indicators. (Arellano Yaguas, 2011 for Peru, Lagos and Blanco (2010) for Chile). The type of production linkages generated by mining activities at the local level (e.g. local purchase, local staff, using local services) have a larger potential to impact positively local incomes than mining rent investments *per se* (Aragón and Rud, 2009, 2013 for Peru). Mining rent investment tends to benefit urban and departmental (municipal/provincial) levels and men, rather than rural areas and women -particularly if they are poor- (Perry and Olivera, 2009 for Colombia, Ward and Strongman, 2011 for Peru, Lagos and Blanco, 2010 for Chile). Mining areas are vulnerable to economic downturns when mining activities are coming to an end or have ended. This is related to the high dependence that is usually created with local economies (Hérnandez, 2004 for Colombia, Perry and Olivera, 2009 for Colombia). Local mining rents investments tend to focus on some infrastructure and public utilities (e.g., roads, health and education) although the particular impact on each public utility varies among Latin American experiences (Armenta Vergara *et al*., 2012 Hernández, 2004, Perry and Olivera, 2009 for Colombia, Arreyano Yaguas, 2011 for Peru). The strength of institutions -including the level of participation, transparency, fiscal control, quality of justice, public administration and, in particular, corruption- is a key element for the effective investment of mining rents. A large flow of funds does not imply itself an improvement in the living conditions of local populations (Caselli and Michaels, 2009 for Brasil, Perry and Olivera 2009 for Colombia, also Mehlun *et al*., 2006; Van der Ploeg, 2008, Areski and Van der Ploeg, 2007). Finally, studies in Peru and Bolivia, signal correlations between the increase in the mining royalty (*canon minero*) that local governments receive and the increase in the number of local conflicts (Arellano Yaguas, 2011 for Peru).

3.3.1.2 Local employment for locals

Tourism scenario. Based on the case of Mindo, we estimated the evolution of the working age people employed in tourism in Íntag during the 25 years (see section 3.2.1.2). Tourism creates various direct job profiles. A large portion of jobs refers to activities such as transport, construction, cleaning and cooking in hotels and restaurants, maintenance, etc. requiring skills not necessarily bound to a secondary or university degree that can be fulfilled by Íntag inhabitants. There are opportunities for youth as guides. Some positions require profiles with university or technical degrees for management and administration work.

Mining scenario. Using as basis the employment structure of the Condor Mirador project (Walsh, 2010) we estimated the total number of jobs required for the construction and operation phase of a possible project in Íntag. We consulted experts of the College of Engineering and Mines of Quito to assess the training required for each mining job and analysed Íntag´s population census to identify the potential jobs for locals. In this vein, we considered that those jobs requiring technical expertise (e.g. mining engineers) were covered by non-local workers. And, that those jobs that do not require specialized technical training could be covered by the local workforce.

Criteria discussion

Figure 14 shows the number of direct jobs per month for locals generated in each scenario. Throughout the period, tourism has the potential to generate more jobs for locals than mining activities. Mining jobs peak in the construction phase (first 21 month) with land clearance and construction of transport and mine infrastructures. We estimated that during mining operation, approximately 43 locals could get a mining job in Íntag.

If local training courses were promoted, local participation could increase. We note, however, that even if locals could hypothetically fill all the 370 jobs of the operation stage, as soon as the tenth year, tourism would already catch up generating more employment opportunities for locals.

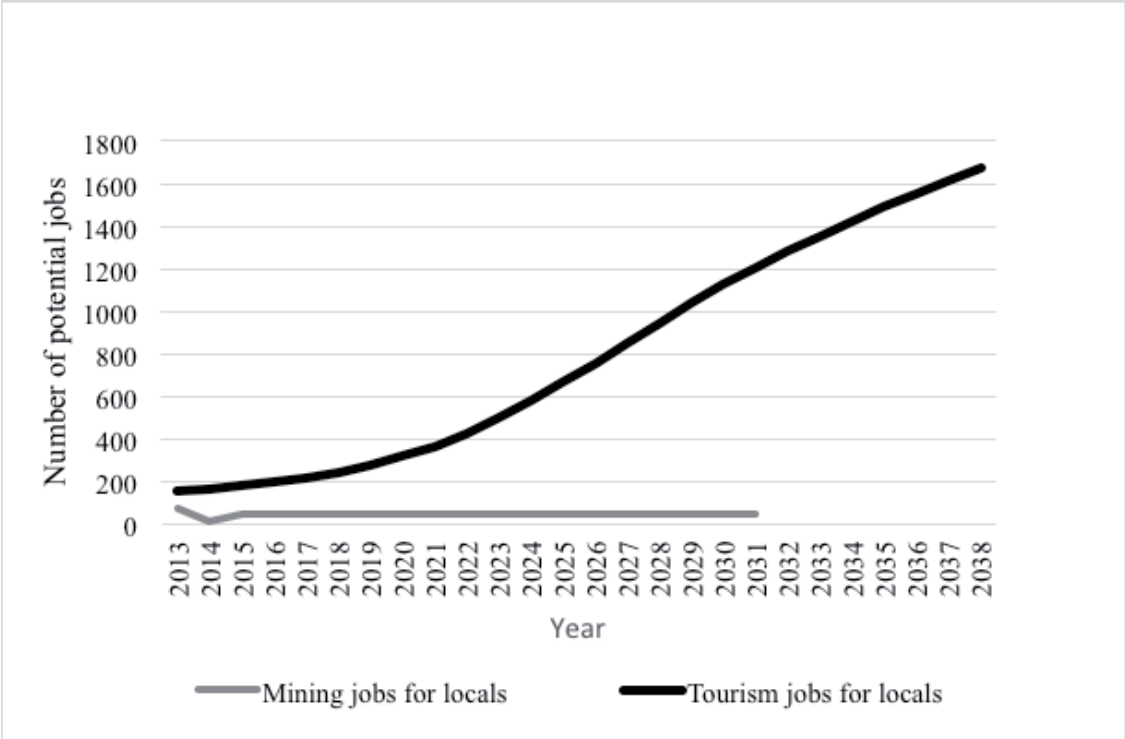
When jobs are not covered by locals, it is plausible that immigrants workers will commute between their home regions (inside or outside of Ecuador) and Íntag, as it

occurs in Chile and Peru (Aroca and Atienza, 2008, IIMP, 2007, 2009).

These estimations allow to clarify the potential of mining to promote the direct employment of the local workforce. However, mining proponents underline that indirect employments are also relevant.

Figure 14, illustrates the long-term performance of local direct employment opportunities, that in the case of mining ends with the project.

Figure 14: Direct employment opportunities for locals in mining and tourism scenarios



Source: own elaboration

3.3.1.3. gender balance

Tourism scenario. We analysed the economic census of Mindo (CNEC, 2010) that differentiates gender in the jobs generated per sector of activity.

Mining scenario. We reviewed studies on the cases of Chile and Peru (SERNAGEOMIN-INE, 2007; IIMP, 2007, 2009).

Criteria discussion

Obtained estimates do not allow to assess the comparative evolution in time of both scenarios. They provide a general indication of opportunities for men and women. In a mining scenario, women could occupy about 5 % of direct jobs and men 95%. This is a rather optimistic assumption for women direct employment opportunities in Ecuador, as in Chile and Peru there is a longer trajectory of technical capabilities development. For the tourism scenario, we estimated that around 65% of direct jobs were occupied by women and the remaining 35% by men in Mindo. It is also relevant to note that studies conducted in Andean communities of Peru where large-scale mining projects are developed indicate that mining activities increase the vulnerability of women, especially if they are poor (Ward and Strongman 2011, Himley 2011).

3.3.1.4. Indirect employment and production linkages

We conducted a quantitative estimate of the number of potential indirect jobs. Then, we reviewed Latin American case studies in order to assess where (which activities and at which geographical scales) could these jobs be created, examining their production linkages.

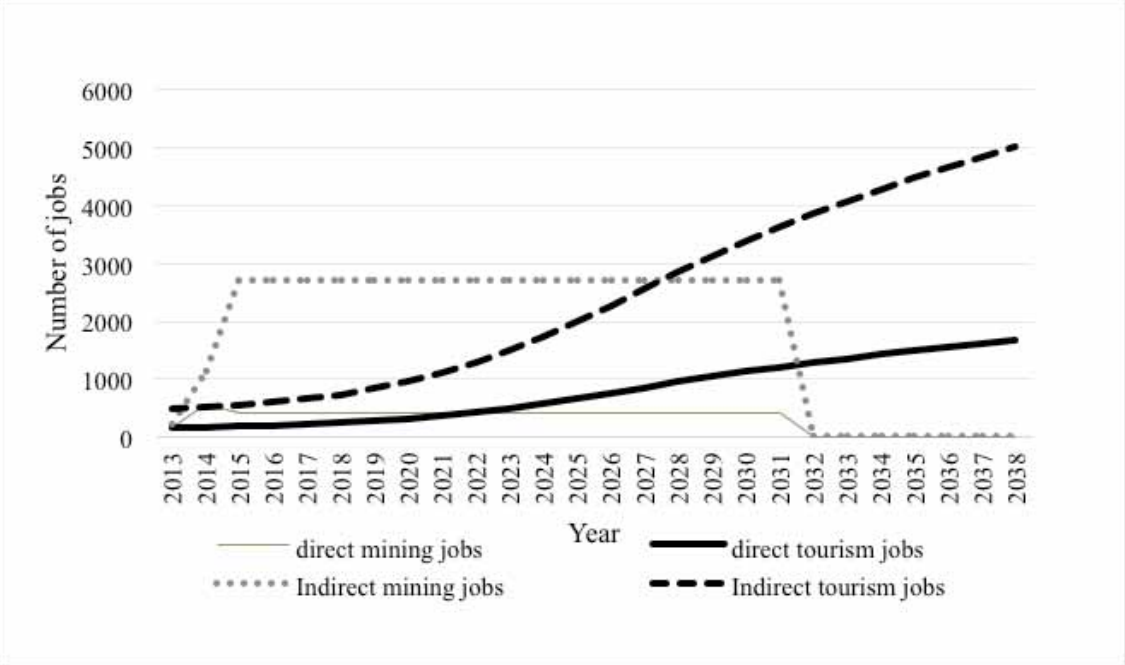
Tourism scenario. International literature on the tourism sector estimates that for each direct job, three indirect jobs are created (World Travel & Tourism Council for Latin America, 2013). In order to assess the production linkages, a review was conducted on the tourism literature and on studies on Mindo (Ruiz Proaño, 1999, Ruales Jurado, 2008; Lasso *et al*., 2004).

Mining scenario. According to the Cóndor Mirador EIA, during the first 21 month of construction an approximated 1,14 man/hours would be generated as indirect work for each direct man/hour of work. After construction, in the operation period about 2700 indirect jobs were estimated, a ratio of 1 (direct):6.5(indirect) (Walsh, 2010). For comparative purposes, we signal that according to the national survey conducted by the National society of mining, oil and energy of Peru, in the period 2000-2005, the mining sector generated 4 indirect job for each direct one, a 1:4 ratio (IIMP, 2009). Assessing the local production linkages of mining activities is not an easy task, as most studies are

conducted at the national or regional level. We reviewed case studies at the regional and local scale conducted in Chile and Peru.

Criteria discussion

Figure 15: direct and indirect jobs in mining and tourism scenarios



Source: own elaboration

Figure 15 presents total and indirect jobs generated -inside and outside Íntag- making transparent the performance over time of scenarios. While in the short term mining activities generate more indirect jobs, in the medium and long term the generation of indirect jobs in tourism is larger. Moreover, in the long term, the difference between scenarios grows as the mine closes down and the direct and indirect-related mining jobs disappear.

The local generation of indirect jobs is related to the ability of mining and tourism activities to foster local productive linkages up-stream (e.g. demand of production inputs) and down-stream (e.g. providing inputs to other activities) and the linkages generated by the salaries paid. The characterization and assessment of the production linkages differs for mining and tourism. In the case of mining the linkages are mainly located up-stream, as the product is exported (Aroca, 2002). In the case of tourism,

there are up-stream and down-stream linkages (Ruiz Proaño, 1999). We discuss the key elements able to foster local indirect jobs in each scenario based on a literature review of LA cases. In this vein, no closed assessment is offered, but a discussion pointing to the key potentials, risks and uncertainties. In this line, we aim to open up a discussion that makes transparent the implications and relevance of different private and public decisions in each scenario.

From a geographical perspective, what is defined as “local” by policy makers and companies has significant consequences when considering the spatial distribution of production linkages in a mining scenario. In the case of Íntag, the nearer urban centres of Cotacachi and Otavalo (located outside and neighbouring Íntag Valley), are already established and dynamics economic centres that supply goods and services to the region. These urban centres are suitable to become the main providers to a potential mining project. If the transport infrastructure is improved, as planned, these cities could be at about an hour driving distance from the mining area. It would be reasonable to consider that these cities and Quito could concentrate most of the economic dynamism linked to the mining project (buying food, financial services, intermediate offices, etc.). If this happens, most of the benefits associated with local expenditure and indirect linkages with mining activities could be located outside Íntag. This phenomenon is known in Peru and Chile (Vega-Centeno, 2011, Arrellano Yaguas, 2011, Torres-Zorrilla, 2000, IIMP, 2009, Aroca, 2002, Kuramoto, 2000, Himley, 2011). So, what is defined as "local" or “area of influence” by private and public entities and what policies and spatial arrangement are created by mining activities and its linkages are key when considering the potential impacts of mining productive linkages in Íntag. Studies in Peru highlight the relevance to promote local expenditures of mining companies as a way to increase local income (Aragón and Rud, 2009). However, studies also signal that access to credit and investment, and management abilities at the local level to take advantage of these opportunities and consolidate over time are needed to foster local linkages (IIMP, 2009; Arellano Yaguas, 2011).

Production linkages in a mining scenario are also linked to the expenses made by mining workers. However, when workers do not live in the mining area and commute with their areas of destination, local expense decreases significantly (Aroca, 2002). A study conducted in the Chilean mining region of Antofagasta estimated that the commutation of mining workers implied a lost local multiplier effect of more than 120 million US$ (Aroca and Atienza, 2008). Finally, from a long term perspective, as

mining activities are active for limited time, so are the direct, indirect jobs and local productive linkages established.

In the case of tourism, studies conducted in Mindo signal that the magnitude of the – indirect and induced- tourism related productive linkages depend on a number of factors such as the profile of tourists and its level of expenditure (foreign/local), length of stay (day, several days), the type of tourism (recreation/nature, high/low range, community/private tourism) (Ruiz Proaño, 1999, Ruales Jurado, 2008; Lasso *et al*., 2004). While some forms of tourism, such as community based, fosters local linkages, other types of tourism, such as high range private business, tend to form enclave dynamics anchored in non-local providers. Íntag region has the conditions to offer, and in fact it is currently offering, activities for both domestic and foreign tourists. There are also efforts to promote a network of community-based tourism that enhances linkages with other local projects.

Moreover, Mindo case signals that a strong growth and unmanaged tourism can have adverse effects for local producers and local chain of production. In fact, enclave tourism can promote un-favourable dynamics for crop and livestock production. For example, the growth and expansion of tourism may trigger a rise in the price of land and labour.

The ability of the agricultural sector of Íntag to capture the demand for food for tourism is a key factor to boost local chains of production. (Ruiz Proaño, 1999, Ruales Jurado, 2008; Lasso *et al*., 2004). Íntag has a more consolidated agricultural profile nowadays than Mindo in its beginning as a touristic area (i.e. mostly cattle). However, in the case of Íntag we must also consider the role (synergy and competition) that close urban centers such as Cotacachi and Otavalo could have as suppliers of goods and services.

3.3.2. Socio-Cultural Dimension

Both scenarios are linked to relevant demographic and cultural changes. However, the particular features of socio-cultural change vary among scenarios. A review of Latin American case studies was done for the mining scenario and a review of Mindo experience for the tourism scenario.

Tourism scenario. Among the most significant impacts associated with tourism

in Mindo there were processes of inter-culturality. For instance, there were processes of exchange and learning between locals and tourists (i.e. culture and customs). In Mindo, these exchanges have contributed to further ecological awareness and valuation by local inhabitants or also to the formation of mixed couples that has led to the out-migration of local youth (Ruiz Proaño, 1999; Ruales Jurado, 2008).

The flow and in-migration of people attracted by tourism employment opportunities has fostered population growth. Research in Mindo points to a loss of social cohesion and bonds, local perception of insecurity, changes in habits (drug use) or weakening of community activities such as *mingas* (i.e. communal work practices). These changes may be of greater or lesser intensity depending on the policies put in place to promote and regulate the boost of tourism, as well as the relative weight that different forms of tourism have (recreation, nature, etc.), as different types of tourism are related to different impacts. (Ruiz Proaño, 1999; Ruales Jurado, 2008).

Mining scenario. Among some of the socio-cultural impacts that have been linked to large-scale mining in Chile and Peru we highlight increased number of local conflicts related to the changes in the access to land and water by rural inhabitants (Robles Mendoza, 2003; Himley, 2011; Bebbington, 2012; Bury 2007), conflicts related with the high expectations of employment that remain unfulfilled (Arellano Yaguas, 2011, Himley, 2011) and the increased vulnerability of some social sectors such as low-income women, elder men and women with low formal education level (Himley, 2011; Ward and Strongman, 2011; Zegarra Méndez *et al*., 2007). The displacements of families and villages is also relevant in Íntag (Jica, 1996).

Studies in Peru and Chile signal that people living in mining areas have worse health, particularly in rural areas (Zegarra Méndez *et al*., 2007; Aroca, 2002). Moreover, the in-migration of men looking for work (not always satisfied) has been associated with increased levels of alcoholism, prostitution and crime (Robles Mendoza, 2003). There is also a deterioration of family relationships due to harsh working conditions experienced by workers (intensive shifts) that affects all family members (located both within and outside the mining region) (Aroca, 2002).

3.3.3. Environmental Dimension

Tourism scenario. Íntag promotes a tourism associated with the environment (nature and recreational related activities). Hence, the deployment of tourism could promote further biodiversity and ecosystem conservation policies, contributing to reduce ongoing deforestation trends. However, population growth and the construction of tourism-related infrastructures also entail certain environmental pressures.

With the increase of tourists, the frequency and number of cars, both private and public increases. This could cause a significant increase of air and noise pollution affecting the health of both people and wildlife. Moreover, transport increases the risk of oil spills and the potential pollution of water and soil. Soil compaction by continued transportation and road construction affects water to infiltration.

The un-controlled sprawl of hotels and housing increases the generation of waste (sewage and solid waste) that requires specific management facilities in order to avoid environmental pollution. Íntag currently does not have waste treatment plants able to cope with this waste generation. Other potential impacts are the visual impact due to urban growth and the reduction of the attractiveness of the nearby landscape, conflicts over the access and use of water among competing activities, such as tourism and agriculture, and the generation of highly annoying noise levels for both local inhabitants and wildlife due to the proliferation of clubs and nightlife.

Mining scenario. A review of recent studies on the performance of mining environmental management practices in the mining sector –particularly regarding Acid Drainage (AMD) - and the key techniques used for the Condor Mirador (and by inference to our hypothetical Íntag mine) was conducted in order to assess in detail and make transparent environmental risks and uncertainties.

It is out of reach for a SMCE study to conduct an in-depth analysis of all the environmental impacts related to a potential exploitation of a large-scale open pit copper mine in Íntag. To characterise the main impacts we reviewed the EIA elaborated by the JICA (JICA, 1996, 1998) and Ascendant Copper (Ascendant Copper, 2005), the environmental technologies used in the Cóndor Mirador exploitation EIA (Terrambiente Consultores, 2006). Finally, we conducted a review on the performance of the environmental technologies used.

Large-scale open pit metal mines located in places with high rainfall, high underground water flow, permeable rocks that contain potentially toxic minerals (eg. AMD prone minerals) and sensitive ecosystems, are particularly risky from an

environmental perspective. As well as expensive to manage (Guard Guide 2012). Junín/Llumurahuas and Condor Mirador present these features.

Junín EIA (JICA, 1996, 1998) highlights as significant impacts the risk of water pollution, deforestation and impact on the biodiversity given the proximity of the mine site to a zone of ecological conservation (JICA 1998). Other impacts refer to the construction of mine infrastructures, risk of accidents and impacts on the air and soil quality. Moreover Junín is located in an area with risks of landslides, earthquakes and volcano eruption.

One of the most significant mining risks given its severity and low reversibility is AMD. The formation of these drainages can occur during mine operations or after its closure, when there are no active control measures and treatment of water (surface and groundwater) and water flows through the mining area down the basin. This phenomenon occurs when the rock - the mine pit walls, debris, tailings or other waste-rock- is exposed to oxygen and water and acidic compounds are formed. Especially if iron and sulfide minerals (such as pyrite) are abundant and there is an insufficient amount of material to neutralize acid formation. AMD dissolves other metals and pollutants present in the ore forming an acidic solution with a high content of sulphates and metals. The drainage of compounds such as arsenic, selenium and other metals can occur even in the absence of acidic conditions. The activity of bacteria can accelerate the oxidation of sulfur compounds by prolonging during tens, hundreds or even thousands of years the generation of acid mine drainage (LAW, 2010). This process can impact the human and wildlife health and the productivity of ecosystems (eg. Agriculture) (MNEI Consortium, 2000).

Studies point out that it is unclear what will be the long-term performance of current cyanide leaching management measures as other water polluting processes (government of Australia, 2007, MEM n/d). Common measures such as the use of clays and membranes –as those planned for Cóndor Mirador- to contain in the long run mine-wastes have proven insufficient (Wilson *et al*., 2003, Jennings *et al*., 2008). Richards *et al*. (2006) concludes that fulfilling the regulations has not ensured the best AMD management. It has been pointed that strong institutional frameworks able to manage this risk in the long term, sometimes forever, are decisive (government of Austrialia, 2007). This problem has been identified in countries with a long history of mining activities such as the Australia, United States. As signalled in section 3.3.1.1, countries with a long mining history are starting to point to the limitation of current regulations to

cope with the costs of long-term mining environmental liabilities.

4. Conclusion

This paper has explored the potential of SMCE approaches to structure and assess the economic, socio-cultural and environmental implications of developing mining and tourism scenarios for Íntag, according to the dimensions and criteria that are relevant to their inhabitants. In order to cope with the high uncertainties (from structural, to lack of information) and complexities (social and technical) at play, diverse techniques and disciplines were used. Social and participation approaches were key to characterise Íntag, build and adjust the dimensions and criteria of assessment. Recent territorial processes and projects in Ecuador and Latin America were the bases to build two territorial scenarios that allowed to avoid the idealization of certain options, such as tourism, and the identification of lessons from past experiences. In this vein, the assessment of dimensions and criteria for each scenario was the result of an interdisciplinary work that aimed to present with transparency available knowledge, risks and uncertainty, pointing to key areas of action for governments and civil society.

Table 4 summarizes the main results and trends assessed in the paper for mining and tourism scenarios during 25 years and considering long term trends discussed in the paper. We highlight bellow the key results used to build this qualitative summary on the comparative performance of scenarios in each dimension and criteria of analysis.

Table 6. Qualitative summary of results

Dimension	Criteria		25 years		+25 years trends	
			Extractive Scenario	**Tourism Scenario**	**Extractive Scenario**	**Tourism Scenario**
Socio-economic	a. Fiscal (& royalty) income	To national government	Very Good	Good	Very Bad	Good
		To local governments	Very Good	Good	Bad	Good
	b. Direct employment for locals		Moderately Bad	Very Good	*	Very Good
	c. Gender balance (women direct employment opportunities)		Bad	Very Good	*	Very Good
	d. Indirect employment		Good	Very Good	*	Very Good
	e. Production linkages		Good	Good	Moderately bad	Good
Socio-cultural	f. General assessment		Moderately Bad- Bad	Moderately Good	Moderately Bad	Moderately Good
Environmental	g. General assessment		Very Bad	Moderately Bad	Very Bad	Moderately good

Note: The scale used is from the worse to the best performance: very bad, bad, moderately bad, moderately good, good, very good. * There are no mining activities, hence, not related jobs.

a) **Fiscal (& royalty) income**. While during the mining construction and operation period there was a large generation of fiscal and royalty income to national and local governments. After mining activities, there were high risks of a local economic downturn. Moreover, there were risks that new costs would be generated (health, environmental liabilities) to national and local governments. The tourism generated a relatively smaller amount of fiscal income but these were maintained in time and could gradually increase.

b) **Direct employment for locals.** Tourism activities had a larger potential to employ Íntag inhabitants than mining. A trend that increases in time. Mining employment opportunities for locals were concentrated in the first two years of construction of the mine site. Mining related jobs end with the mining project.

c) **Gender balance.** Tourism activities offered larger employment opportunities for women than mining activities. Moreover, as the mining project closes there are no more related jobs.

d) **Indirect employment**. While in the first years of mining activities the number of indirect jobs related to this activity overcome those of tourism, tourism had a larger capacity to generate indirect jobs in the medium long term.

e) **Production linkages**. Both tourism and mining activities have the potential to generate local linkages. Their extent is tied to the particular way these activities are deployed. As mining activities end, direct linkages disappear. If we consider the medium-long term indirect impact on other productive linkages conflicting effects can be identified. An improvement of infrastructures could remain, affecting positively other future linkages. However, environmental impacts and a decrease on productive capabilities could have negative consequences.

f) **Socio-cultural dimension.** Both mining and tourism activities entailed territorial, cultural and social changes that were not desired by Íntag inhabitants. However comparatively, the socio-cultural impacts of mining activities were more negative than for tourism. A positive impact of mining activities in the short and long term could be generated by an improvement of local infrastructures and services.

g) **Environmental dimension.** Considering the available information of Junin/Llurimagua copper deposit, the environmental standards applied in a recent copper mine in Ecuador and a literature review of environmental technologies and practices to manage AMD; we considered that there were risks to generate medium and long-term environmental liabilities. These could be irreversible, particularly in the case of AMD. Tourism activities were related to environmental impacts to water, air and land, as a source of noise and pollution; most of these impacts could be reversed. Tourism activities requirement of environmental quality could also act as a driver towards ecological conservation.

Social and participatory multi-criteria decision techniques have been pointed as suitable to "solve" socio-environmental conflicts (Wittmer *et al*., 2006). However, we consider that in contexts of strong power inequalities expressed by both the hegemonic discourses (no-uncertainties, eco-efficiency, economic benefits) and the criminalization/de-legitimation practices deployed by LA governments against environmental activists, a more humble approach should be adopted. An approach that acknowledges that under a substantive perspective –that emphasises the quality of the process- it is more reasonable not to aim at "solving" the conflict but at building dynamic process of appraisal and learning (Stirling, 2006).

In this vein, this research aimed to structure and nurture on-going deliberations and decision-making processes in Íntag and Ecuador. The SMCE provided an assessment that made visible the local scale and the values that inhabit it. The results of the research were presented and discussed in assemblies and workshops in Íntag during 2012 and 2013, interviews were given to local radios and results were presented in a Conferences and a workshop in Quito. A book will be launched in 2014 in Ecuador to widen the audience and create new opportunities for debate.

Some of the debates triggered in Quito when presenting the results of this study were related to the interest to widen the study to assess the impacts on and trade-offs between local and national scales. This is particularly relevant in the context of post-neoliberal regimes that are increasing the state capture of mining benefits while promoting welfare policies. While this was out of scope for our study, it offers a challenging new avenue of research.

Finally, when this paper was about to be submitted, Ecuador held local elections that resulted in a change of Íntag political map. While the previous Municipal government and most local parishes were aligned with the national government and supportive of mining activities, recent elections have resulted in the opposite picture. Such a shift seemed unlikely in 2011, as the political feasibility of a non-extractive future for Íntag. In this new political context, the potential of this work gains relevance as a tool to empower debates on alternative futures.

Conclusions

This thesis has studied from a political ecology perspective, large-scale metal mining struggles in Latin America, with two single cases in Argentina and Ecuador, and a multiple-case regional approach that addressed cases from 5 countries (Peru, Argentina, Guatemala, Ecuador and Colombia). Different methodologies were used to explore how and why mining conflicts, their actors, discourses and strategies emerged and deployed. Particular attention was given to a new LA phenomenon: community consultations on metal mining projects that allowed to analyse the scalar dynamics and struggles at play in mining contestation. A study combining SMCE and scenarios techniques to structure the multi-dimensional implications of developing mining and tourism activities was finally carried out for Íntag, Ecuador.

This section presents the main findings of the thesis, pointing out the key contributions, conclusions and potential avenues for future research.

Key findings

*Conflicting views on development models***.** Mining conflicts reflect a clash of development views that is not only referring to the perception of environmental impacts and risks or their unequal social distribution, but also to political and institutional models.

Environmental Justice Movements (EJM) that form in mining struggles highlight the impacts and risks mining activities have on land, water, health and livelihoods. These impacts are perceived as affecting long-term local capabilities to develop certain economic activities (e.g. tourism, agriculture or livestock), which are the current bases of subsistence or are lost potentials for the future. Governments and companies promoting mining activities emphasize instead the large investments and incomes that will be generated, boosting local wellbeing. In this vein, there is a tension between strong and weak sustainability and short-long term views.

In Esquel (Chapter 1), the mining project was imposed in a context of high social mobilizations and debates over the local future. The mining project was presented as inevitable; and decisions framed as bound to technocratic procedures, which reduced uncertainties, clashing with on-going processes of participation, deliberation and mobilization. EJM questioned which were the values, actors and procedures that should

lead the decision-making process defining local development options and choices.
EJM shape the discourse on how local development should be and which are the procedures appropriate to define it, in a relational and processual way. The way mining companies and governments act, interact and deploy formal decision making procedures shapes the formation of EJ frames, discourses and claims on development strategies. Activists are also influenced by learning processes that shape their views and strategies, when they inquire, read, and exchange experiences in Internet, travels, meet other activists, and watch documentaries.

Anti-mining movements as EJM. Although the anti-mining movements studied in this thesis do not always define themselves as EJM, EJ concerns are deeply rooted in the claims of the organizations and movements that mobilise against mining activities (Urkidi and Walter, 2010, Reboratti, 2008). As pointed by Debbané and Keil (2004) EJM are situated in contingent, multi-scalar and often quite different political, social and economics contexts, and may adopt different forms and discourses.

While dialogues with governments tend to focus on economic distributional issues, EJM frame the implications of mining activities in wider terms. As pointed by Schlosberg (2007), EJM address matters of distribution, recognition, and procedures. These dimensions appear in most cases of mining contestation in intertwined and integrated forms that change as conflict deploy and EJM interact with other actors and movements.

Anti-mining movements claim that the way mining activities are promoted, assessed, and approved misrecognises their material and cultural dependence on land and water and disregards their views and customary procedures. EJMs point that developing mining activities jeopardizes livelihoods dependent on forests, land and water quality and availability, stressing the unequal distribution of costs and benefits among social groups and actors (transnational companies, states, local communities).

EJM emphasize that official decision-making procedures governing mining activities fail to adequately recognise the rights of indigenous and peasant groups for free, prior and informed consent present in international conventions (e.g. 169 ILO) and national regulations (e.g. Colombian Constitution). Non-indigenous groups claim that they have a right to participate in meaningful ways in decisions affecting their present and future. As pointed by Agarwal (2001) and Fraser (1998), patterns of disrespect and disesteem are institutionalized in participatory and decision-making processes.

Decision making processes and participation. The role of decision-making procedures in the emergence and deployment of mining conflicts is a transversal theme of this thesis and has been poorly addressed in the literature on mining conflicts.

As pointed by Vatn (2005), decision-making structures are value-articulating institutions that determine the values that can be expressed, the way in which these values are expressed, and bound the universe of possible outcomes. These structures determine the procedures that frame debates defining what will be negotiated, how and by whom.

Chapter 1 analyzed how the government and the mining company responded to growing concerns about the mining activities claiming that decisions were reserved to experts, limiting public involvement in the formal assessment and approval process. Moreover, the relevance of the local scale was downplayed given the Provincial formal power to decide on mining activities. To express their points of view, residents created an independent, inclusive, and critical space for deliberation: the Autonomous People's Assembly (AVA, Asemblea de Vecinos Autoconvocados).

The analysis of consultations presented in chapter 2, highlights how official decision making participation arenas for mining decisions can foster unrest, given frustrations due to the partial information that is presented and the powerless participation modes that they offer. Moreover, as official mining decision-making procedures prove unable to address local communities concerns, disputes form around these procedures and their decisions. As examined in Chapter 1 and 2, EJM act to prevent or boycott public audiences, as these spaces are seen as devoid of any practical influence on decisions.

The emergence of EJMs and consultations in Esquel and in other places of LA analyzed in Chapter 2 are partially due to how official decision-making procedures were deployed. As a response, alternative assessment and participation spaces led by EJMs were created. Moreover, EJM were unable to introduce technical (e.g. cyanide impacts and management measures) and non-technical (e.g. values, worldviews, uncertainties, rights) high stake concerns in official procedures, increasing social unrest.

Exploring the potential of innovative assessment approaches: SMCE & scenarios. Considering findings on the shortcomings of formal decision-making procedures for mining activities, this thesis has explored alternative tools to aid decision-making and deliberation processes.

Social multi-criteria evaluation techniques (SMCE) have been developed to address sustainability problems characterized by deep complexities and unavoidable conflict (Munda 2004). SMCE use social and participatory approaches that allow to take into account the controversial, multi-dimensional and uncertain outcomes of decisions (Martinez Alier *et al.*, 1998, Munda, 2004) in a systematic, interdisciplinary and structured way (Munda, 2008). The SMCE emphasize the importance of transparency; stressing that results of an evaluation exercise depend on the way a given policy problem is structured and thus the assumptions used, the ethical positions taken, and the interests and values considered have to be made clear.

While SMCE have been applied to a wide diversity of conflicts and policy decisions, this thesis conducts the first application on a large-scale mining conflict (Íntag, Ecuador). Participation and social methods allowed to frame an assessment based on the needs and expectations of local actors. Moreover, the combination of SMCE and scenario techniques facilitated the evaluation and comparison of extractive (large-scale copper mining) and non-extractive (tourism) activities, and the consideration of the wider territorial dynamics and outcomes these activities trigger in the short and long term. The performance of scenarios was examined according to three dimensions: socio-economic, socio-cultural and environmental, each of which signalled the main risks and uncertainties of the scenarios. In this vein, the approach made the local scale, its social values and uncertainties, that are discounted by hegemonic discourses in the LA mining debate, more visible.

The assessment shows that while a mining scenario may generate a large fiscal and royalty income to local and national governments during mine operation, in the short and long term tourism has the potential to have a better performance in terms of environmental protection, socio-cultural impacts, job generation for locals and for women.

Role of criminalization in the emergence of community consultations. This thesis also finds that criminalization (e.g. repression, legal prosecution of activists, public de-legitimation) plays a pivotal role in the emergence of consultations. Mining referenda

emerged in contexts where activists were criminalized, and where concerns regarding the physical and psychological integrity of activists were rising. In this line, consultations operate as an innovative form of protest that aims to foster participation, promoting a democratic setting that protects its participants.

In most cases, consultations have succeeded to pacify local tensions. However, in some cases there is an intensification of criminalization events as a medium-term official reaction to consultations. This has occurred in some cases, as in the Colombian consultation where communities were bombed, even when there was a ruling from the Colombian Constitutional Court recognising the legitimacy of the local consultation.

*The relevance of local and national Environmental Justice Organizations and Environmental Justice Movements***.** While governments and mining companies often blame transnational organizations for the emergence and shaping of mining conflicts, the case studies presented in this thesis point in a different direction. While transnational organizations can play a role supporting and legitimating local mobilization -as pointed in Chapter 1 and 2- EJM movements born from key mining conflicts in LA have become themselves central actors in the multiplication of mining contestations inside and outside the borders of their countries.

Chapter 1 (and 2) signaled the central role of the Esquel anti-mining movement in the organization of a national front critical of mining activities in Argentina and the organization of a regional Internet platform of news and resources. Chapter 2 highlighted how the EJMs born from the conflicts in Tambogrande (Peru) and Sipakapa (Guatemala) conflicts also played a key role in the shaping of sub-national, national and LA processes of contestation. Red Muqui, born from the Tambogrande conflict was a key provider of information, experience and materials for the Majaz/Río Blanco case and following consultations in Peru and Latin America. The 'Noalamina' platform, coordinated by the Esquel anti-mining movement, is a key provider of information and resources for LA communities. In Guatemala, the great multiplication of mining consultations is partially grounded in the national and international repercussion of Sipakapa's experience and organizations. With the support of different national NGOs and associations, two regional networks were created around mining and hydropower conflicts in Guatemala (Huehuetenango Natural Resources Assembly and the Western Peoples Council).

The role of Documentaries. The multiple-case study on consultation pointed to the relevant role of documentaries as transporters of experiences and testimonies among distant places and people. While the role of Internet was pointed out in previous studies (Bickerstaff and Agyeman, 2009), documentaries have not been addressed in detail. In Chapter 2 we highlighted the role of documentaries in social learning processes and in the construction (and deconstruction) of EJ discourses and strategies.

Documentaries on mining impacts (e.g. Choropampa mercury spill in Peru) and on consultation experiences such as the one in Tambogrande and Sipakapa have travelled in LA and have been shared among movements and communities. These documents show the magnitude of large-scale mining activities, their impacts and the opposition these activities trigger in other places. Moreover, these are powerful documents as they bring testimonies and experience of people with whom communities feel identified. In this vein, documentaries are playing a central role making affected communities acknowledge that their conflict is not local, but is simultaneously local, national, regional, global and structural. In this process, a common perspective is constructed and solidarity linkages are strengthened.

This finding suggest that there is a promising line of research to be explored in relation to the development of "assemblage" perspectives -coming from the actor-network theory (ANT)- when analyzing how people, texts, machines, devices and discourses relates and collectively constitute EJ scales.

Multi-scalarity of EJMs and consultations. The study of the wave of consultations in Latin America (chapter 2) shows how local organizations and movements jump scales engaging with networks and organizations (e.g. environmental, anti-mining, Human Rights, indigenous, Catholic) that move across multiple geographical scales, learning and gaining leverage in their struggles. These networks circulate information, experiences and strategies. They also support local and supra-local actions and promote the mobility of activists to learn and share experiences among communities, to LA and international forums, to foreign (e.g. UK courts in Majaz case) and international tribunals (e.g. Sipakapa to the Inter-American Commission on Human Rights).

As signaled in Chapter 2, organizations and networks working at different scales not only play a key role spreading the experiences and lessons from previous consultations. They also provide logistic, technical and financial resources to new

consultations. And, contribute to enhance and defend the legitimacy of this institution by acting as international observers and supporting these events in national and international courts. Finally, consultations can also be framed as multi-scalar as they are grounded on municipal, national and international rights and regulations.

Against Harvey (1996), we find that while grounded in claims for apparently local interests and values, consultations do not respond to a militant particularism. Community consultations are born from a multi-scalar demand for civil society empowerment and democratization in government decision-making processes in extractive industries. The spread of consultations in Latin America was fostered hand in hand with a diversity of actors and spatial processes that are contributing to construct a common EJ anti-mining framework of action in the region.

Consultations and struggles over scales: re-constructing scales of regulation. In this thesis, political ecology and political geography studies on scale and EJMs are combined to analyse how movements moved among scales to gain leverage in their struggles, and also how scales are, themselves, issues of contention in struggles over power.

Chapter 2 concludes that consultations entail the construction of a new scale of regulation -local participation via consultation/referendum- that is more than the sum of existing regulations and rights. While grounded on these frameworks, their scope and meaning is reclaimed and appropriated by EJMs. In this vein, community consultations rebuild the right of affected communities to participate, locally, in meaningful and empowering ways, in decisions on high-impact activities affecting them. With this common aim communities strive for local participation rights appealing to, combining and reshuffling available regulations, rights and local traditions.

This finding challenges previous studies on EJMs politics of scale that argued that the success of EJMs is related to their ability to adjust their scale of meaning with the appropriated scale of regulation (Towers, 2000, Bickerstaff and Agyemann, 2009, Kurtz, 2003). The significance of community consultations is that communities are not only mobilizing and discursively struggling to contest the governance of mining activities at the scales of regulation that are available (e.g. formally disputing EIA at national scales, participating in local public audiences, going to national courts), but are deploying innovative strategies to create and put in practice empowering and

democratic local participatory institutions. This has been possible by the creation of hybrid institution that allowed to build and legitimate a new scale of regulation.

Community consultations as a hybrid institution. Chapter 2 emphasizes that the ability of EJMs to foster the construction of a new scale of regulation for mining activities -local participation via consultation/referendum- is related to the formation of alliances between EJMs and local governments.

In this vein, among the lessons that can be brought from the study of the wave of consultations is that these are (in most cases) not informal events independently fostered by EJM. Instead, consultations are the product of a challenging spatial grammar (Bulkeley, 2005) that combines the multi-scalarity of EJMs and local governments. Thus, consultations can be seen as a hybrid institution that combines the (formal and informal) competences (i.e. regulation, management, communication) and different forms of power (e.g. legitimacy, networks, resources, trust) of social movements and local governments.

This finding has relevant implications. The role that local governments play in the organization and legal support to consultations reflects the heterogeneity of interests and values across different government bodies. This points to the need to further problematize the role of governments in environmental governance frameworks. As hybrid institutions not always aim to "bypass governments" (Delmas and Young 2009), but, on the contrary, they can anchor part of their legitimacy in some of its bodies (e.g. local governments).

Moreover, in different cases of consultations not only local government but other bodies of the national government (Departments, elections office) and State (e.g. Justice, Ombudsman) support consultations, signaling the heterogeneous nature of governments and also States and the spaces of opportunity these offer.

Another implication of seeing consultations as a form of hybrid governance is that in contrast with other forms that reinforce the exclusion of disempowered groups (Ford, 2003, Swyngednouw *et al*., 2002, Swyngedouw, 2005), consultations are organized by and take into account marginalised groups as indigenous peoples, women and peasants.

Key conclusions

I would like to highlight three key conclusions that are drawn from this thesis.

First, different elements and dynamics are relevant to understand how and why actors mobilise against large-scale metal mining activities in different places of Latin America.

Considering mining ores and activities, large-scale metal mining activities are environmentally highly sensitive activities (large waste generation, water and toxic chemicals requirements). As the global social metabolism grows and the demand for fresh metal ores increases (e.g. copper and gold for China), mining frontiers expand reaching deposits of lower quality that involve rising environmental liabilities. Mining conflicts are emerging in the midst of these pressures to extract and export raw materials. An activity that has moreover the support of Latin American governments that frame mining activities as a priority to promote national development.

Considering the emergency of EJMs critical to mining activities additional elements have to be considered. The thesis has pointed to how EJMs, their discourses and strategies shape as conflicts unfold in a dynamic interplay of actors, institutions, scales and learning processes.

EJM opposing mining activities in Latin America are composed by a myriad of actors, including indigenous and peasant's movements, farmers, (urban) professionals, local priests, teachers, community leaders, local, national and international NGOs. As these actors interact among themselves and with other actors in the conflict, such as local and national governments or mining departments, perceptions of trust, risks and uncertainty are formed and transformed. Processes of criminalization led by governments against anti-mining activists, their organizations and strategies are also relevant in this process.

Institutions such as official decision-making procedures for mining activities, also play a key role in the emergence of social unrest and mobilization. EJM feel misrecognised and mistreated by these procedures that frame mining decisions as a technical decision to be made at national (or provincial for Argentina) scales. The scales, values, procedures and types of information identified as legitimate by national and local actors differ**.** Moreover, local participation arenas are seen as devoid of any practical influence on decisions, not willing to address the various tangible (e.g. impacts on livelihoods, water, land) and intangible (e.g. power inequalities, value systems, uncertainties) issues at stake for local actors. Formal decision-making procedures

become spaces of contestation, as communities act to boycott or by-pass them.

As local movements jump scales, they network with other local, national and transnational organizations and movements, meeting, sharing and learning about mining activities, their impacts and about other LA and international experiences of mobilization. In this process, strategies of contestation are shared, co-constructed and deployed at multiple scales, networks of solidarity and support are established and a common environmental justice framework is shaped. Jumping scale processes play a central role in the dynamic construction of EJM, their discourses and strategies.

EJM interact with other actors, jump scales, trust, distrust, confront doubts and uncertainties, search in Internet, watch videos, travel to other places, meet experts, activists and movements and discuss, triggering learning processes. However, even with similar information, perceptions of risk differ among actors (Dietz *et al*., 1989). National governments frame environmental, social and economic negative impacts and risks as technically manageable and feasible to compensate (e.g. local mining rent investments). Anti-mining movements claim that the short and long term impacts that mining activities have on livelihoods, health, land, water and rights and their acceptability have to be assessed and decided locally.

Second, and perhaps the main theoretical contribution of this thesis, pointed to how scales are, themselves, issues of contention in struggles over power in mining conflicts. Analysing the emergence and spread of community consultations, we concluded that consultations are a multi-scalar and hybrid institution that construct and new scale of regulation: local participation via consultation/referendum.

This conclusion challenges previous studies on EJMs politics of scale that argued that the success of EJMs is related to their ability to adjust their scale of meaning with the appropriated scale of regulation (Towers, 2000, Bickerstaff and Agyemann, 2009, Kurtz, 2003). Community consultations present an example of how EJMs are also able to deploy innovative strategies to create and put in practice a new scale of regulation based on local democracy and participation. In this vein, consultations put in practice the right of affected communities to participate, locally, in meaningful and empowering ways, in decisions on high-impact activities affecting them.

Third, this thesis underlines the need to rethink assessment and decision-making procedures governing mining activities in order to improve the quality of democracy. During mining conflicts contrasting views regarding the economic, environmental, social and cultural implications of developing mining activities are deployed by affected

communities, governments and mining companies. However, hegemonic discourses led by governments signal eco-efficiency solutions and stress the contribution of extractive activities to the overall national interest de-legitimating critical views and the concerns of local actors. In this context, centralized decision-making procedures, and the local participation spaces these offer, become frustrating spaces that fuel social unrest.

This thesis has applied an alternative framework that combined SMCE and scenario techniques to structure and assess the multi-dimensional implications of developing extractive and non-extractive local scenarios according to the criteria that are relevant to local inhabitants. SMCE allowed to make more visible scales, social values and uncertainties that are discounted by hegemonic discourses in the mining debate that focus almost exclusively on national economic results.

This methodological contribution also points to the responsibility of political ecologists to actively engage in the development of innovative studies that could contribute to local processes of deliberation and learning.

Future lines of research

I identify some future avenues of research born from this doctoral thesis:

Criminalization of EJM in Latin America. Activists and scholars are increasingly pointing to processes of criminalization. However, what is new about criminalization, what criminalization is and in which forms it exists, requires further examination.

SMCE: national and local scales. As pointed in Chapter 3, some of the debates triggered in Quito when presenting the results of the SMCE study pointed to the practical relevance of widening the study to assess the impacts and trade-offs of extractive and non-extractive scenarios considering also the national scale.

Expand research on consultations. While this thesis has analysed the Latin American wave of consultations related to large-scale metal mining projects, new areas of inquiry remain. First, regarding the medium and long-term consequences of consultations and local movements and their struggles. Second, expanding the research to include new cases of mining consultations in Latin America, such as in Colombia and Uruguay. Third, analysing why consultations have occurred in some countries and not

in others, such as Chile, Bolivia, México or other Central America countries. Fourth, study and compare similar consultations that are being promoted for other large-scale impact activities such as dams in Guatemala or Brasil.

Analyse the impacts of post-neoliberal mining policies. On-going changes in mining regulations, specially concerning the state capture of mining rents and the creation and strengthening of public mining companies in countries such as Ecuador and Bolivia, offer new arenas of inquiry. First, I would like to analyse a new organization created in Ecuador, Ecuador Estratégico, a public company in charge of administrating the investments of mining rents and royalties in Ecuador. There is a public discourse that claims that new mining regulations and organizations will curve the resource curse, avoiding corruption and enforcing the investment of mining rents and royalties in affected areas. The procedures (how, who decides, participation of other social actors), outcomes (e.g. how local investments are made and their impacts) and conflicts (e.g. with local governments or communities) could be explored. Second, the social, economic and environmental performance of public companies could be explored and compared to private initiatives.

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