

Digging Deeper

Exploring Roads to Inclusive Development Through Mine Closure
Policy and Practices in the Dominican Republic

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Thesis for the fulfilment of the
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El sol que nace y el día que muere
The rising sun and the fading day,

Con los mejores atardeceres
with the best sunsets.

Soy el desarrollo en carne viva
I am development in the flesh,

Un discurso político sin saliva
a political discourse without spit.

Extract from the song 'Latinoamérica' by Calle 13 featuring Totó la Momposina, Susana Baca
and Maria Rita.

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Abstract

Mining operations have significant environmental and social impacts, including ecosystem fragmentation, biodiversity loss, pollution, and social issues such as low wages and unsafe working conditions. Despite these negative effects, mining plays a crucial role in the transition to low-carbon technologies and the demand for energy transition minerals is expected to surge. However, the potential perpetuation of extractivist models and the negative consequences for communities when new mines open pose a significant problem. Communities often become overly dependent on the mining industry, and when mining operations cease, they face socio-economic decline and environmental degradation. The central topic of this research is mine closure planning and execution, and how it considers socio-economic aspects that can hinder or stimulate inclusive development. The Dominican Republic is taken as a case study, considering its growing mining industry and conditions as a small island developing state. The study was guided by three research questions. The first question examines the socio-economic aspects of mine closure regulations in the Dominican Republic. The second question looks at the interactions between different actors and how they influence the implementation of regulations and practices of mine closure. The third question focuses on finding the particular nuances of how closure activities can lead to social and economic benefits, within the framework of inclusive development. The conceptual framework guiding the research is built on theory-driven policy evaluation and the theory of inclusive development. The research employs a qualitative research design, including the analysis of legal documents and semi-structured interviews with key informants. A two-variant case study, involving an operating and a closed mine, is conducted to explore strategies promoting economic diversification and reducing environmental impact. The main findings highlight the need for improved mine closure regulations that consider social aspects and coordination among government institutions. Community involvement and education are crucial for inclusive development while transforming governance into interactive governance can empower communities. Policy recommendations include establishing dedicated policy instruments, integrating with development policies, advancing inclusive development indicators, and guidelines for public investments, among others.

Keywords: mine closure, inclusive development, mineral governance, community engagement, energy transition metals, just transitions.

Executive Summary

Mining operations have a significant environmental and social impact, occupying a vast amount of land and contributing to ecosystem fragmentation, biodiversity loss, and pollution. They also account for a significant portion of global greenhouse gas emissions and are associated with social issues such as low wages, unsafe working conditions, and forced labour. Despite its negative effects, mining is considered essential for the transition to low-carbon technologies and meeting emission reduction targets. The demand for energy transition minerals, critical for green technologies and renewable energies, is expected to surge. However, this presents challenges in terms of resource depletion, environmental impact, and the need for a circular economy to minimize waste and reduce environmental harm.

The problem addressed in this thesis research is the potential perpetuation of extractivist models and the negative consequences for communities when new mines open. The risk lies in communities becoming overly dependent on the mining industry, and when mining operations cease, these communities face significant socio-economic decline and, in some cases, severe environmental degradation. The key issue is the lack of appropriate mine closure planning that considers the social aspects of closure and post-closure legacies, such as economic diversification and alternative means of production with lower environmental impacts. Addressing these social aspects is crucial for driving inclusive development.

There is an identified research gap in this area, as social aspects are often not adequately considered in mining regulations or fall short in the implementation stage. Moreover, there is a scarcity of research specifically focused on the mining industry in the Dominican Republic. The research will provide insights into how inclusive development can be achieved in mining communities, considering their specific socio-economic and environmental contexts. Ultimately, the findings aim to inform policy recommendations and regulatory frameworks that ensure more comprehensive and socially responsible mine closure processes, particularly in the mining industry of the Dominican Republic.

Aim and research questions

The overarching aim of this research is to generate knowledge on how regulatory frameworks can effectively foster inclusive development through mine closure in the Dominican Republic. For this purpose, there are three research questions (RQ):

RQ 1: How is current and proposed regulation in the Dominican Republic considering socio-economic aspects of mine closure?

RQ 2: What are the interactions and responsibility distribution among stakeholders around mine closure in the Dominican Republic?

RQ 3: What strategies during a mine's lifecycle could best lead to outcomes of inclusive development once mining activities cease?

Addressing RQ 1 and 2 will contribute to documenting practices and processes that have historically been without necessarily following predetermined regulations or certifications and to gain an understanding of the current state of mine closure planning in the DR through the selected case studies. The purpose of RQ3 is to understand how socio-economic crises can be avoided when a mine ceases to operate.

Research design

The research approach will be qualitative, with data collected through the analysis of legal documents and semi-structured interviews with key informants. This research also seeks to explore strategies that promote economic diversification and reduce the environmental impact

of alternate means of production through the analysis of a two-variant case study including an operating, and an already closed mine.

Since there is no specific policy in the Dominican Republic focused on mine closure, several legal documents related to mining, environmental management, and development strategies were studied. The interviews were conducted in person, using a semi-structured format, and involved environmentalists, researchers, experts from the Ministry of Environment, and key informants from the two mines included in the case study.

Table 0-1: Summary of the research design.

The research employs a conceptual framework that incorporates the concepts of inclusive development and policy analysis, specifically theory-based evaluation. Other relevant concepts, such as environmental justice and mineral governance, are also considered to provide different perspectives and influence the research aim of connecting mine closure and inclusive development.

The results were disseminated using an intervention theory based on Chen's (2005) non-linear model, which includes a change and action model. The vehicles of inclusive development by Gupta et al. (2015) were used as overarching codes for Thematic Analysis: (1) Developing relevant epistemic communities and communities of practice and social movement, (2) Transforming governance into interactive governance to enable empowerment, and (3) Adopting appropriate governance instruments.

Main findings

Policy analysis

The consulted public policies showed an improvement from the older documents to the more recent ones in terms of the level of detail and alignment between their objectives, determinants, and outcomes. Although recent documents mention the need for planning for closure more explicitly, regulation focuses more on biophysical aspects than social aspects, which are not explicitly linked to the consequences of mine closure, such as the loss of purchasing power in mining areas. This is except for biophysical aspects that also have a social impact, such as considering the future use of the mining area. The change model can be found throughout Chapter 5 and a full version is on Appendix C.

The process of mine closure requires coordination and intervention from multiple government actors and mining company teams. The study found that the relationship between different institutions, such as the Ministry of Energy and Mines, the Mining Directorate, and the Ministry of Environment, is strongly integrated. However, there is a lack of consistency and limited success in the function of the Development Councils.

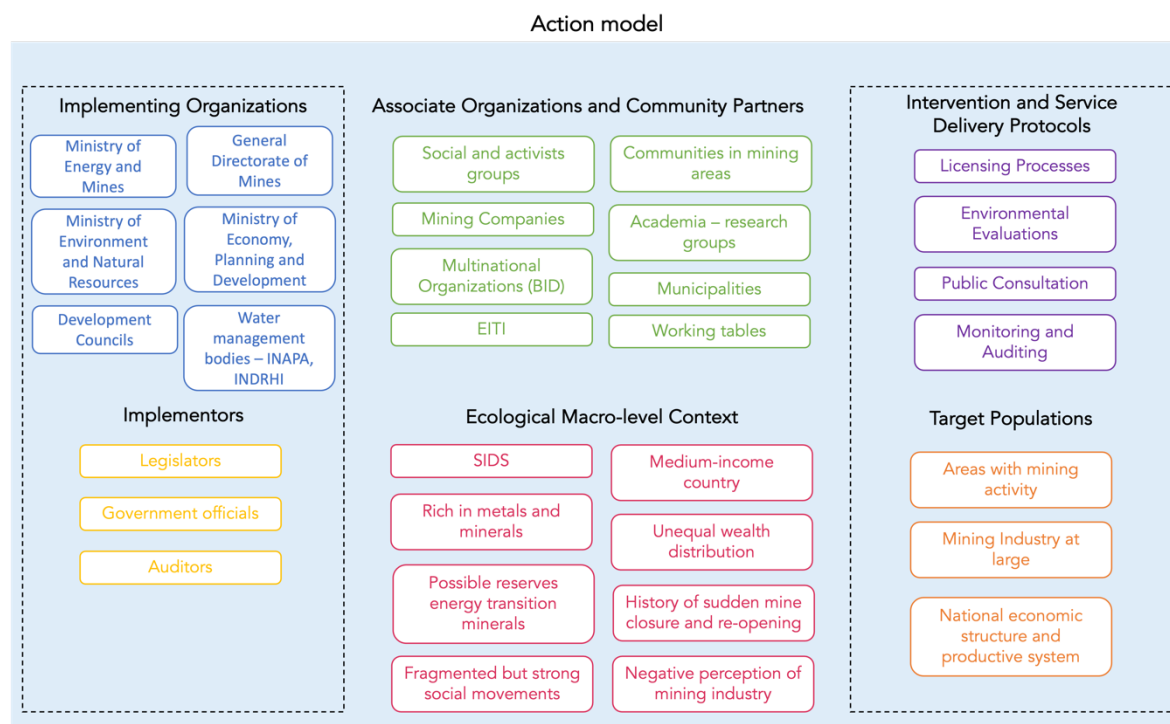


Figure 0-1: Action model of the Intervention Theory.

V-1: Developing relevant epistemic communities and communities of practice and social movements.

Knowledge generation and community organization play a crucial role in inclusive development. Government agencies, scientific groups, and social activists have taken on initiatives to educate and train communities on understanding mine lifecycles and the environmental impacts associated with them. They also aim to shed light on how current economic systems and productive structures contribute to environmental degradation, empowering communities to take a more active role in political discussions. Nonetheless, prioritizing community involvement can still be challenging. Other obstacles include accessing funding, the lack of previous records from mining activities and changes in mining areas, as well as difficulties in accessing information, especially financial data from mines. Contentious opinions exist within the academic sector, with some actors claiming that environmentalists lack impartiality, while these attest that the mining industry covertly resents their active participation in community education.

V-2: Transforming governance into interactive governance to enable empowerment.

Civil society groups are actively engaged and have succeeded in influencing certain aspects of engineering development in the Dominican Republic. However, these achievements have occurred in environments that are not very conducive to their active participation. Mining companies often adopt a paternalistic approach, resulting in a lack of genuine interaction with communities and an increase in mistrust. The importance of rebuilding relationships through the redefinition of social policies is emphasized. It highlights how community involvement has drawn attention to long-term factors that should be considered in closure assessments, such as the challenges and risks associated with managing long-lasting elements like tailings dams and the purpose of post-closure mining sites. The governance dynamics among civil society, government, and mining companies were examined, and there is generally a consensus that mining companies should bear all the costs of closure and rehabilitation, while the government should establish the appropriate structures for the transition during a mine's decommissioning. Some of the policies analysed pertain to development strategies, the National Development

Plan, and the role of Development Councils. Most stakeholders agreed on the importance of community organization and education while avoiding absolute resistance to mining that may hinder positive outcomes of economic growth.

V-3: Adopting appropriate governance instruments.

All respondents agreed on the need to improve regulations and policies. The inadequate regulatory framework for mine closures and the lack of post-closure plans were identified as weaknesses. The results from the interviews highlighted the importance of proper management and closure of mines, emphasizing the need for trust-building and a developmental vision that prioritizes the well-being of communities surrounding mines. The text also mentions the negative environmental effects caused by mining activities and the potential shift towards tourism development in former mining areas, without clear parameters on how to conduct this transition. The use of mining revenue was also discussed, focusing on the need to address poverty reduction and ensure long-term benefits. The importance of integrating mining and environmental laws, ensuring transparency, and addressing closure costs is emphasized. The roles and responsibilities of the state, mining companies, and other industries in mine closure are also discussed.

Policy recommendations

Ex-ante evaluation: It is important to practice ex-ante evaluation, as outlined in the Law of Public Planning. This will help avoid complex policies and ensure that the necessary resources and capacities are in place to implement new policies effectively.

Specific policy instrument: A dedicated policy instrument should be established to guide mine closure planning, including clear requirements and parameters. Additionally, monitoring structures should be integrated with existing systems to ensure compliance.

Integration with development policies: Mine closure policies should be integrated with planning and development policies, considering mining as a means of generating development. This integration will help align objectives and maximize the re-distribution of benefits.

Inclusive development indicators: Indicators to measure inclusive development should be developed and implemented. This will enhance transparency, accountability, and the promotion of equality in the mining industry.

Guidelines for public investments: Clear guidelines should be developed and followed to connect mineral rent collection with reinvestment in development projects. This will stimulate economic growth and promote inclusive development.

Limits and remediation: Limits should be set for the use of former mining sites, with a focus on complete biophysical remediation. Post-closure uses should benefit local communities, and their involvement in decision-making, implementation, and revision processes is crucial. Environmental impacts and potential health problems should be addressed.

Technology transfer: Policy frameworks should include guidelines for technology transfer that support the improvement of productive structures in the Dominican Republic's productive sectors.

Integration of licensing processes: The grant of mining licenses and environmental licenses should be better integrated to avoid confrontation with civil society groups.

This thesis concludes that current policies are insufficient to ensure positive mining legacies and social closure. It suggests that the mining industry can offer development opportunities if mechanisms are in place to promote inclusive development through resource redistribution and reinvestment. Without proper planning, negative repercussions on vulnerable groups and the quality of life can occur as a result of mining activities.

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Abbreviations

CE	Circular Economy
CT-GEREM	Technical Committee for the Management of the State Mining Revenue
Cormidom	Dominican Mining Corporation
CSR	Corporate Social Responsibility
DGII	General Directorate of Internal Taxes
DGM	General Directorate of Mining
DR	Dominican Republic
EIA	Environmental Impacts Assessment
END	National Development Strategy
ETM	Energy transition minerals
GDP	Gross Domestic Product
Falcondo	Falconbridge Dominicana
FIMIDE	Mining Trust Fund for Development
FOMISAR	Provincial Council for the Administration of the Sánchez Ramírez Mining
I	Interviewee
IBA	International Bauxite Association
ICMM	International Council on Mining and Metals
IISD	International Institute for Sustainable Development
IMF	International Monetary Fund
IRMA	Initiative for Responsible Mining Assurance
MEM	Ministry of Energy and Mines
MEPyD	Ministry of Economy, Planning and Development
MIMARENA	Ministry of Environment and Natural Resources
ODPP	Dominican Observatory of Public Policies
OPEC	Organization of the Petroleum Exporting Countries
PMAA	Environmental Management and Adaptation Plan
REM	State Mining Revenue
Sinagerem	National System for the Management of Statal Mining Revenue
SIDS	Small Island Developing State
SNIP	National Public Investment System
SLO	Social License to Operate
TA	Thematic Analysis
UASD	Autonomous University of Santo Domingo
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNDP	United Nations Development Programme
V	Vehicle for inclusive development

1 Introduction

Mining operations occupy 101 583 km² of land in the world; that is a little bigger than the size of Iceland and a figure that is indicative of their environmental impact on ecosystem fragmentation, biodiversity loss as well as water and soil pollution (Karlsson et al., n.d.; Maus et al., 2022). Mining accounts for 4% to 7% of global greenhouse-gas emissions, while its indirect emissions amount to 28%, including energy generated by coal combustion (Delevingne et al., 2020). The negative social effects of mining are equally acute, ranging from instances of low wages and unsafe working conditions to forced and child labour (Bainton & Holcombe, 2018; Church & Crawford, 2018). The mining industry is also intrinsic to neo-colonial practices since it is often carried out around vulnerable populations located in Latin America, sub-Saharan Africa and South Asia through foreign-investment ventures (Church & Crawford, 2018).

Almost paradoxically – due to its contribution to climate change – mining will be an essential activity to enable the transition towards low-carbon technologies and accomplishing emission reduction targets. In the coming decades, demand is expected to soar for around 20 energy transition minerals (ETM) – which include iron, copper, aluminium, nickel, lithium, cobalt, platinum, silver, and rare earth metals – that have been identified to be critical for the development of green technologies and renewable energies (Lèbre et al., 2020). Other trends including demographic growth and urbanization increase point towards a continued surge in demand for metallic and non-metallic minerals important for the construction sector (Christmann, 2021).

Electrification and low-carbon technologies, such as photovoltaic systems and electric vehicles, are very resource-intensive (Watari et al., 2020). This increasing demand for materials has been met with emerging calls for a Circular Economy (CE) by moving away from linear production, minimizing waste and using materials in circular loops, thus eradicating virgin resource extraction and meeting demand with less environmental impacts (Chatham House, 2021; Richter, 2022). Nonetheless, the actual implementation of CE strategies has been limited (Corvellec et al., 2022) and total recycling of current minerals and metals reserves would not be enough to face the expected rise in demand by 2050 (Lèbre et al., 2020). Recent research has found that an increase in the gross domestic product (GDP) of European countries leads to an increase in extractive activities four times as high as the resource savings resulting from Circular Economy initiatives (Bianchi & Cordella, 2023). These are indications that an increase in the extraction of virgin resources through mining appears impending to achieve the energy transition (Christmann, 2018; World Bank Group, 2017).

The ‘just transition’ paradigm seeks to point out other possible trade-offs of the transition to low-carbon economies (UNFCCC Secretariat, 2020). The concept has many layers, but it essentially calls for the inclusion of equity and justice issues into political debates framing the energy transition (Newell & Mulvaney, 2013). Managing the adverse negative impacts of extracting ETMs is essential to the vision of a just energy transition (Lèbre et al., 2020). As the end of mining activity approaches productivity decreases and economic vulnerability increases significantly, also modifying the community of the area (Forget & Rossi, 2021), however, mine closure planning has historically not contemplated the deep-rooted economic dependency that is created in communities surrounding mine operations (Bainton & Holcombe, 2018)

Mines have limited lifetimes, usually, closure is reached when long-established mines reach resource depletion or mining permits end. Changes in commodities markets and adverse

political or social disruptions may also lead to mining sites abandonment¹, as one or a combination of these factors often turn the mining operation financially non-viable (Peck, 2005). Although the first stages of a mine's lifecycle – development and extraction – are often carried out with eager spirits and promise for economic growth (Laurence, 2006), the importance of comprehensive planning for the end of a mine's lifecycle – known as mine closure, reclamation or remediation – is often underestimated by both corporate and governmental actors (Forget & Rossi, 2021). Unsustainable development is one of the main threats to mining regions worldwide in the face of mine closure (Syahrir et al., 2021).

Progress has been made in some respects, including activities of physical dismantling and decommissioning, environmental site remediation, and landscape rehabilitation, however, these are often still performed with little planning ahead of closure (Syahrir et al., 2021). Mine closure planning frequently neglects socio-economic factors such as sustaining the economic growth of mining communities after closure and planning for post-mining trajectories (Forget & Rossi, 2021; Gregory, 2021), despite earlier research and publications pointing out the adverse effects for government and industry of negative mining legacies and the opportunities of integral mine closure planning that is part of the project's lifecycle (Peck, 2005). This is a worrying fact since around 1 000 mines worldwide are expected to face closure in the next decade (Forget & Rossi, 2021) and this does not include the mines that face unexpected closure, often due to financial constraints and commodity price fluctuations, highlighting the importance of early preparation for mine closure (Peck & Sinding, 2009; Syahrir et al., 2021).

The effects mining communities encounter in the face of poorly planned closure include loss of economic base and purchasing power, loss of access to services provided by mining companies, loss of other livelihoods that depend on the mine, sustained health impacts, population decrease and environmental degradation that leads to social pressure and economic landfall aside from affecting other productive activities like agriculture and tourism (Bainton & Holcombe, 2018; Gregory, 2021; Peck, 2005; Syahrir et al., 2021).

The aforementioned impacts are experienced more profoundly within middle-income countries and small-island-developing states (SIDS), such as the Dominican Republic (DR) which also experiences stark levels of social inequality (Alvaredo et al., 2022). Latin America's top gold producer is the Pueblo Viejo mine located in the DR (BNamericas, 2022). Producing 813 000 ounces in 2021, it stands as the country's top export product while other important mineral exports include ferronickel, silver, copper, and bauxite (ProDominicana, 2022).

As a SIDS, the DR faces various challenges particular to its insular conditions which are exacerbated by mining activities, such as intensification of extreme weather events, loss of ecosystems and their services, biodiversity loss, and reaching the limits of land capacity (UNEP, 2014). The land occupied by mining is significant and lengthy remediation procedures could be more impactful than in other countries with bigger surface areas.

Currently, the DR has active mining in 24 of its 31 provinces and 63 granted exploration licenses (DGM, 2022; García, 2017), Figure 1-1 presents a map of current mining permits. Moreover, ongoing research projects are on the hunt for rare-earth and lithium reserves (Acosta, 2022; Tovar, 2022). With these prospects and active mines looking to extend their lifetime, the Dominican mining industry seeks to grow and strengthen itself (Mejía, 2022), increasing concern

¹ A mining site is abandoned or orphaned when mining activities have stopped, and the mining company responsible for the site stops operations, leaving behind potentially hazardous conditions and environmental impacts without appropriate closure or relinquishment (Peck, 2011).

from different civil society groups about the need to strengthen regulatory guarantees that ensure safety standards and positive mining legacies (Isa Conde, 2022; Peña & Lizardo, 2018).

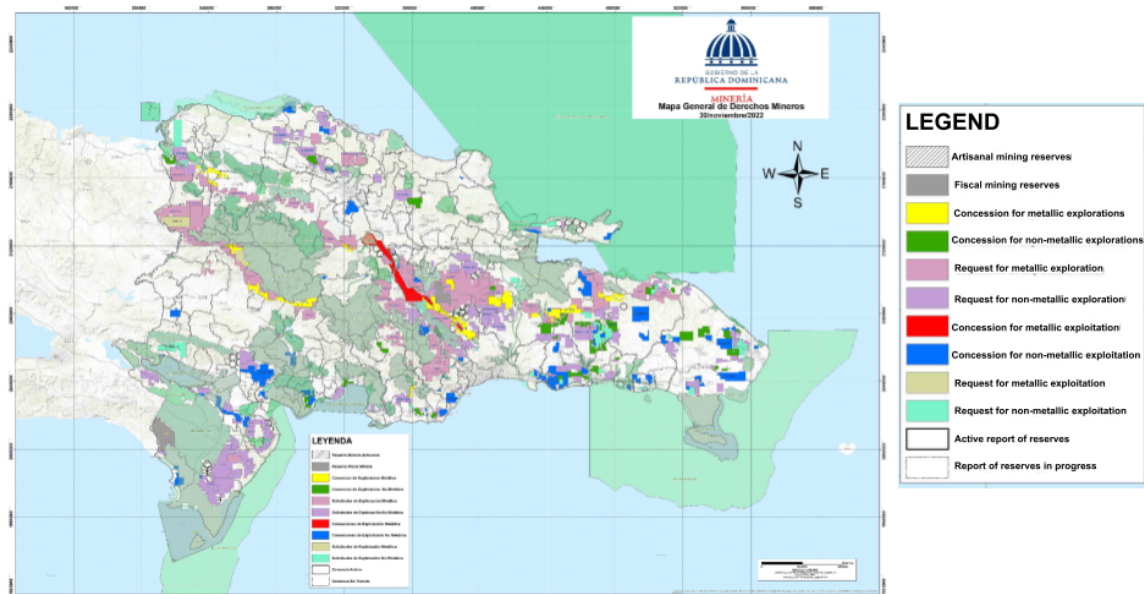


Figure 1-1: Map of areas with mining licenses in the Dominican Republic.

Source: Ministry of Energy and Mines of the Dominican Republic (2022)

1.1 Problem Definition

Given the importance of mining for the transition into low-carbon economies and the immediate potential increase of exporting mined materials, a resource-rich, small-island developing state such as the Dominican Republic is likely to increase its mining activity. New and existing mines will eventually close. However, the deep-rooted social and economic changes surrounding communities will persist. Cases of unplanned and sudden closure evidence the importance of starting mine closure planning at the beginning of a mine's lifecycle (Getty & Morrison-Saunders, 2020; Syahrir et al., 2021). Moreover, it is integral, encompassing environmental, social, as well as economic aspects and progressively reviewed and implemented (Peck, 2005).

Although academic research focusing on mine closure in the Andean region exists (Gregory, 2021; Kung et al., 2020) – which has been the closest geographical reference for assessing mining policies in the Dominican Republic – I could not locate any publications covering mine closure planning or the connection between mine closure and development policies specific to the Dominican context. It is also noteworthy that there are no instruments in place that specifically regulate mine closure in the Dominican Republic. Instead, mine closure is mostly regulated through environmental policies, such as regulations for environmental licenses. However, there is no clarity on the inclusion of other aspects, such as socio-economic considerations, or the relevance of mining in the country's development strategies.

Without understanding the specifics of the DR mining industry, particularly the accountability of different stakeholders, is difficult to arrive at context-specific solutions. By analysing stakeholder perspectives, current regulations, and corporate-led practices I seek to identify how Dominican regulatory frameworks can bridge the gap between more robust mine closure

planning and practices that are focused on maintaining inclusive development of mining communities after closure.

1.2 Aim and Research Questions

The overarching aim of this research is to generate knowledge on how regulatory frameworks can effectively foster inclusive development through mine closure in the Dominican Republic. For this purpose, there are three research questions (RQ):

RQ 1: How is current and proposed regulation in the Dominican Republic considering socio-economic aspects of mine closure?

RQ 2: What are the interactions and responsibility distribution among stakeholders around mine closure in the Dominican Republic?

RQ 3: What strategies during a mine's lifecycle could best lead to outcomes of inclusive development once mining activities cease?

1.3 Scope and Delimitations

The geographical scope of this research is the Dominican Republic, all legal documents I evaluate are part of Dominican national legislation. However, since there is no specific regulation targeting mine closure, I look at documents regulating the mining industry, the environmental management and development strategies and specifically look at the sections related to mine closure from each of these. The list of documents and their relevance can be found in section 4.2.

This research develops a case study focusing on two varieties of mines. One of them of a bauxite mine which closed in 1985 and another of an operating copper mine that is still in operation. Both cases are of metallic mining in the Dominican Republic, I take these cases to identify trends in relation to mine closures beyond the analysis of public policies.

The importance of integral mine closure has been highlighted. This thesis closes in on the social aspects since there is more research on the environmental, and technical-physical aspects of remediation. Moreover, the seemingly unequal distribution of wealth generated from mining activities motivates the consideration of vehicles for inclusive development as part of mine closure planning.

1.4 Ethical Considerations

This thesis research is partly informed through the semi-structured interviews with key informants. All interviews were voluntary and conducted with previously agreed consent regarding the purpose and intended use of the data. Transcripts will be kept safely in password protected local folder on my personal computer and iCloud drive and will be stored for 5 years. Interviewees will be kept anonymous, and any referencing or quoting will be using descriptions (i.e., employees working with environmental certifications at mining companies).

No direct names are used to understand the potential career risk that may be perceived by interviewees. Although no information that could jeopardize the competitiveness of mining companies has been collected, the issue of mining is a sensitive one in the DR, particularly because of past environmental damages and contracts that favoured foreign companies to the detriment of the Dominican state. For this reason, the informed consent form highlights the strictly academic nature of this research to reassure all participants.

All interactions with interviewees were handled in a respectful manner and if information about vulnerable groups is gathered, such is treated with discretion, to avoid misrepresentation.

My previous work experience in the mining sector in the Dominican Republic has only served to my orientation towards choosing this as my thesis topic. In this thesis project, I am an independent researcher, and I am not affiliated with any organization. There are no conflicting interests that could influence my research process or its conclusions.

1.5 Audience

With this research, I provide empirical contributions to the overall field of mine closure research. There are very few examples of successful and integrated mine closures, as well as a lack of robust regulations that can serve as models. By developing case studies in the Dominican Republic, I have also recorded practices that are not yet documented, especially through my interviews with actors involved in the closure of the bauxite mine.

Policymakers and authorities in the realms of mining, environmental management and are an important group since the results of this thesis include recommendations on existing policies and diagnoses of the need for new regulations. Mining companies in the DR would be interested to learn how their operations may be lacking in certain aspects and how to integrate efforts with regulators, which would be crucial to maintaining their social licenses to operate.

Dominican academics and researchers to motivate future inquiries, especially of a quantitative nature, since detailed statistics about expected mine closure and its social and environmental liabilities are hard to locate and there has been a lot of interest in estimating demand increase and diagnosing mineral reserves. Similarly, the findings of this thesis can serve as a tool for civil society to inform their calls for social and environmental justice.

Even though the conditions of mine closure are sure to be particular to every case, this research produces recommendations regarding how legal frameworks regulating the mining industry in the Dominican Republic can lead to more inclusive development. Moreover, these findings could be transferable to other countries with similar contexts, such as other SIDS.

1.6 Disposition

This thesis is composed of seven chapters. Chapter 1, introduces and contextualises the research problem and motivation for research. It sets out the scope for the research, ethical considerations and intended audience for the research.

Chapter 2 presents an overview of the literature review around socioeconomic aspects of mine closure from the realms of public policy, industry practice, and the role of standards. It also includes an introduction to the case study and the context of the Dominican mining industry.

Chapter 3 covers the elements of my conceptual framework, delving into the theoretical underpinnings and how inclusive development and policy evaluation are integrated to support the analysis of this thesis.

Chapter 4 delves into the research design and the chosen methods for data collection and analysis, an introduction to the materials collected and a brief note regarding reliability and validity in qualitative research.

Chapter 5 comprises the findings addressing the aim and research questions and an integrated analysis of the elements of the conceptual framework by the construction of intervention theory.

Chapter 6 discusses and reflects on the findings and research process in relation to the reviewed literature and methodological choices.

Chapter 7 offers concluding remarks, policy recommendations as well as pathways for future research.

2 Background and Case Study

There is a lot of expectation that if the mining industry adheres to social and environmental standards it can contribute to sustainable development (Brock, 2020; World Bank Group, 2017). However, researchers have questioned whether the economic benefits of mining can compensate for its adverse effects and generate true social welfare (Antares Rodríguez Grullón, 2012) noting that it can create "islands of prosperity in a sea of poverty" (Sagawe, 1989, p. 71). One of the direct consequences of mine closure is unemployment which is perceived as a cause of poverty, especially in informal, unequal economic system (Fernandez-Caamano & Johnson, 2005).

Past reports have acknowledged the difficulties of mining companies to deliver long-term development in host countries (Bainton & Holcombe, 2018; Peck, 2005). Many countries with active mining industries already have vulnerable economic systems due to their high dependence on mineral exports. Given the current landscape and growing demand for minerals, there is a risk that expanding the mining industry without proper fiscal and regulatory instruments could worsen institutional, economic, and social weaknesses and hinder economic diversification (Peck, 2011).

Mine closure is a stage in the lifecycle of mining operations when the production stage has ceased involves a series of practices to decommission and dismantle a mine and restore the natural conditions of the mining site (International Council on Mining and Metals (ICMM), 2019). The closure process is dynamic since it involves careful planning and execution beforehand, and is multi-layered, involving social, environmental, and economic dimensions (Laurence, 2006).

While closure procedures can vary depending on the specific context of their application, there are general requirements that must be met to ensure appropriate closure. Although the practice of performing integrated mine closure is not globally widespread (Peck, 2005), there is a growing industry consensus regarding certain closure practices.

The purpose of the following literature review is to cover the existing research on the topic of mine closure, paying closer attention to how it is operationalized and regulated to include social aspects. The aim is also to gain an understanding of the identified knowledge gaps that have motivated this thesis project.

2.1 Current Visions of Mine Closure

Although researchers have made progress in understanding the particularities of closure processes in different contexts and their relevance (Bainton & Holcombe, 2018; Brock & Stevens, 2021; Gregory, 2021; Kung et al., 2020; Peck, 2005; Syahrir et al., 2021) the true extent of the environmental and social effects of negative mining legacies is yet to be completely understood.

Peck's (2005), comprehensive report on mine closure highlights the challenges of achieving successful closure planning and execution. Despite some activities addressing closure and post-closure, such as ensuring physical safety, health and safety, and waste management, regulations on mine closure were rare and often ineffectively applied until the 20th century. Furthermore, financial structures for closure and post-closure were often lacking, and the importance of planning closure as part of a mine's lifecycle for reasonable timeframes was overlooked, leading to mine abandonment.

Communities have historically borne the greatest liabilities and received the least benefits from mining projects, and conflicts cost time and money (Syahrir et al., 2021). Properly trained personnel are required to involve community stakeholders in closure planning. At the possibility of a global initiative organizing responsible mining practices, experts have called for a holistic approach to mining legacies including preventing pollution and mining-related disasters, as well as socioeconomic issues (Peck, 2011).

One of the challenges in implementing mine closure policies is determining the financial requirements to guarantee that closure costs are met regardless of the mining company's financial viability. While public bonds are one way to provide financial assurance, it can be difficult to ensure that closure costs are covered without negatively impacting a company's profitability (Peck, 2011; Peck & Sinding, 2009). Additionally, identifying suitable post-closure uses and funding for maintenance also remain significant challenges in the mining industry (Barbosa et al., 2019; Syahrir et al., 2021).

Preserving records on mine management and geological data sets has not been standard procedure for mining companies after closure, having to rely on anecdotal accounts for research (Fernandez-Caamano & Johnson, 2005; Peck, 2005). The literature shows a need for integration among actors and modes of execution, policy and institutional development, and capacity building (Brock & Stevens, 2021; Peck, 2005). The role of government is to ensure that stakeholder expectations are met, but engaging with stakeholders is complex, as positions can be influenced and may not represent the interests of the majority (Laurence, 2006; Peck, 2005, 2011).

2.1.1 Post-Closure Scenarios

In some instances, mines at their production stage suspend operations for a period known as 'care and maintenance' (Peck, 2005). However, the extent of care and maintenance can be discretionary, making it difficult to differentiate between definite closure and maintenance periods. Such processes also have a social impact, involving job losses that can occur abruptly (Fernandez-Caamano & Johnson, 2005; Syahrir et al., 2021). Research also highlights the need for guidelines for the proper approach when embarking on re-mining of abandoned or orphaned sites to generate value and prepare for safe and proper physical closure, although it is not clear how this can interact with social aspects (Peck, 2005).

It is important to distinguish between different types of land use, such as active care versus passive care stages, as this is highly relevant to environmental matters. However, this complexity can also have social implications, and as Peck (2005, p. 48) notes, "the true success of closure will only emerge in the longer term". Regulations in developed mining nations typically require the return of sites to "self-sustaining ecosystems," but decisions on whether to use only native species or commercially productive ones, or whether to remove all infrastructure or assign it for social benefit, can limit the potential for post-mining uses with financial revenue yield. Therefore, it is necessary to have appropriate infrastructure and policies in place to guide decision-making processes. Table 2-1 contains an overview of land-use maintenance stages.

Table 2-1: Land use definitions.

Land-use definitions (after Robertson et al. (1998))	
Term	Definition
Sustainable use	Use or uses that can be sustained indefinitely with the resources provided (including fiscal resources), or which can be generated by the use. Renewable resource uses (forestry, hydro development, commercial recreation, etc.) are typical examples. Uses that are subsidised (e.g., from a trust fund) are examples of fiscally augmented but sustainable use.
Self sustainable use	Use that is sustained by natural processes and does not require anthropogenic intervention. Examples include unmanaged wilderness or nature reserves with no maintenance.
Passive care sustainable use	Use that requires infrequent, periodic, and low effort (anthropogenic input) in order to maintain the sustainable condition or use. Examples include grazing rangeland where passive care and maintenance is required.
Active care sustainable use	Use that requires frequent or continuous high-level effort (anthropogenic input) in order to maintain the sustainable condition or use. Examples include the operation and maintenance of a water treatment plant for contaminated site discharges.

Source: Peck (2005)

Post-closure supervision involves one of the most important tasks, which is ensuring that no environmental or social issues are left for local governments and municipalities to deal with. The responsibility to remediate improperly closed mines, similar to abandoned or orphaned mines, tends to fall onto governmental actors (UNDP, 2018). Governments often seek help from the mining sector, but very often, they do not provide sufficient assistance (Peck, 2005).

A recent study contextualized in post-mining regions in selected European countries² that sought to gather the different opinions of stakeholders on their priorities for the implementation of mine closure and natural remediation using Q-methodology found that overall, the environmental aspects were prioritised over social and economic ones with the top ‘viewpoints’ being: (i) limiting and preventing negative environmental impacts, (ii) planning beyond economic aspects, (iii) considering closure planning as a multi-disciplinary expert task, (iv) ensuring transparency and full access to information and (v) placing ecology and biodiversity first (Streit et al., 2023). In their discussion, the researchers reflected that although economic aspects were not a priority for respondents³ it contrasted the focus of the closure standards⁴ used in their methodology, where economic aspects are a central focus partly due the intended audience being mining operations in countries where mineral extraction is an important economic activity and closure phase represents a crucial step to determine whether mining activity provides more benefits or damages. The study also concludes that of the standards

² Estonia, Greece, Poland, and Portugal and Austria.

³ Actor groups were civil society and non-governmental organisations, extractive industries, and government.

⁴ AngloAmerican’s Mine Closure Toolbox, ICM’s Integrated Mine Closure: Good Practice Guide, The Initiative for Responsible Mining Assurance (IRMA)’s Standard for Responsible Mining and Rio Tinto’s Closure Approach.

utilized only IRMA had environment as a core element of closure practices, while ICMM and the company standards had social aspects integrated into economic aspects.

2.1.2 Corporate Trends and Best Practices

It has been widely claimed that mining companies operating in middle-income countries have higher operation standards than those set out in the national laws of said countries (International Institute for Sustainable Development (IISD), 2021; World Economic Forum (WEF), 2011). However, as noted in Baiton and Holcombe (2018), mining companies also tend to dilute their commitments as production decreases and apart from not properly calculating costs for mine closure, seek to avoid closure responsibilities or externalize to government or other third-parties.

One of the positive aspects of early planning for closure is that it allows to establish progressive implementation and monitoring mechanisms including provisions to avoid pressure on the company's financial assets (Peck & Sinding, 2009). Integrating closure planning into the overall planning of a mine's lifecycle also allows for feedback to assess how effectively implemented rehabilitation practices are and adapt to the specific site conditions (Getty & Morrison-Saunders, 2020; Morrison-Saunders et al., 2016). The comprehensiveness of mine closure planning can also lead to identifying ways of optimizing resource extraction while restoring the ecosystem's functionality. For example, creating smaller waste streams, progressive backfilling⁵ or concurrent mining. Collaborating with key stakeholders to set priorities for mine rehabilitation can help to avoid a surge of new responsibilities and reduce harmful impacts on local communities. It also provides an opportunity to reflect and receive feedback on how community interests are being met, and can help to reduce the risk of non-compliance (Peck, 2005). This aligns with sustainable business models where the notion of shared value goes beyond generating value for shareholders, by integrating the three dimensions of sustainability – social, environmental and economic – and generating value for all stakeholders (Bocken et al., 2015).

The mining industry's response to social and environmental concerns often comes through standards and assurance schemes. These guidelines are also useful for ensuring the attainment and preservation of the social license to operate (SLO), which refers to the acceptance of extractive operations by locals and other actors affected by it. An outstanding example is the Integrated Mine Closure: Good Practice Guide from the International Council on Mining and Metals (ICMM), an organization formed in 2001, whose members cover a third of the global mining industry⁶. This organization has identified mine closure as one of the biggest challenges that the mining industry is facing (Brock & Stevens, 2021). The ICMM guide (2019) is structured according to a series of procedural recommendations for the planning and execution of closure, and lists 12 tools with feedback loops between them, as well as examples of good practice and case studies (ICMM, 2019; Streit et al., 2023). It also includes a walk-through of mine closure planning introducing the concept of 'integrated closure', which ideally begins at the start of mine planning and is developed alongside communities, includes social aspects, considers visions for post-mining land-use, develops an understanding of closure costs, and ensure government's financial assurance in case of bankruptcy or site abandonment. This mine closure plan should end with relinquishing the site back to governments or other established third parties and be updated regularly. Nonetheless, the guide recognizes that relinquishment is not always a possibility, but robust planning and execution of closure activities increases the possibility of relinquishing the mine site to third parties (Brock, 2020). Past experiences of the unsuccessful

⁵ In underground mining, it involves returning removed materials to the underground areas of the mining site. (Rankine et al., 2007)

⁶ ICMM has 26 members from large multi-national mining corporations and 39 commodities associations (ICMM, n.d.).

application of closure plans, as well of the realization that some physical impacts were not perceptible at the time of formally transferring officially closed sites from mining companies to governments have diffculted the acceptance of a transfer of land post-mining (Peck, 2011).

This guide is very empathetic on the standardisation of corporate practices and it puts particular interest in the proper execution of social aspects such as stakeholder engagement through mine’s lifecycle including integration on planning and efforts for economic recapitalisation as a measure to mitigate social impacts of closure (Streit et al., 2023). Figure 2-1 illustrates the key elements of the guide, highlighting social aspects.

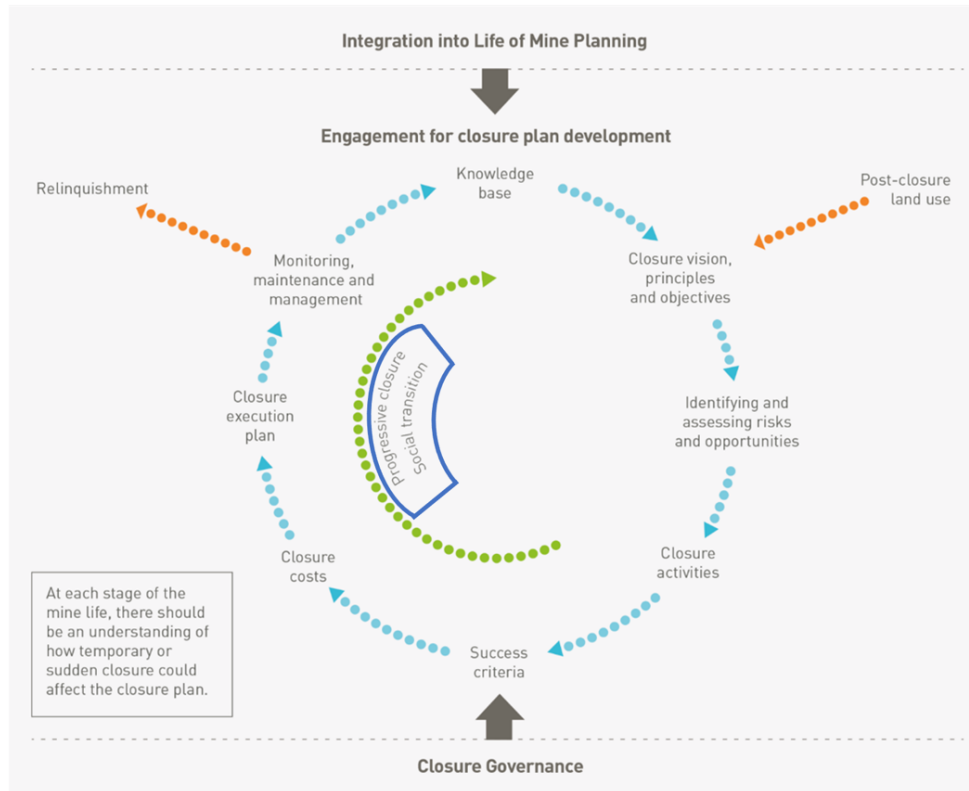


Figure 2-1: Illustration of the key elements of the Integrated Mine Closure: Good Practice Guide from the International Council on Mining and Metals (ICMM).

Source: ICMM (2019)

Environmental aspects of closure activities include building tailings coverage, managing waste deposits, removing contaminated soil, and stabilizing water treatment plants (ICMM, 2019). Early consideration of post-land uses, assessing risks and opportunities, and incorporating them into the iterative process of closure planning is crucial. Monitoring is also important, and a pre-defined set of ‘success criteria’ should be established with key stakeholders, including complementary closure works or post-closure activities. Monitoring helps to identify areas in need of maintenance and potential adjustments in approach.

A key provision of the ICMM guidance is the creation of a ‘knowledge base’, essential for informing closure planning with site-specific context throughout the lifecycle of the mine. Previous research has highlighted this as a challenge for achieving appropriate closure (Fernandez-Caamano & Johnson, 2005; Peck, 2005). This knowledge base should include data on economic and social conditions, operational data, applicable certifications, and legal commitments (ICMM, 2019). The ICMM has been continuously referred to as a case of best

practice among industry standards (Everingham et al., 2022; Sauer & Hiete, 2020; Streit et al., 2023) and according to Bebbington (2015) the ICMM alongside the Extractive Industries Transparency Initiative (EITI) have promoted the approval of national policies on mine closure in different countries, but with limited success. Nonetheless, these types of standards still stand as an aspirational direction, lacking case studies of their successful application (Bainton & Holcombe, 2018; Getty & Morrison-Saunders, 2020). Moreover, they have been criticized as a mere ‘pragmatic response’ from the sector, building from a business-risk management approach which can result in the minimum possible standards (IRP, 2020). The standards are accused of greenwashing⁷ for relying too much on the interests of the ‘demand’ and ‘supply’ actors⁸ of the mineral supply chains and failing to drive deep-rooted change on the livelihoods of miners (Mancini et al., 2021) (Mancini et al., 2021).

2.1.3 Mine Closure Within Policy Frameworks

The voluntary nature of responsible mining schemes and multi-stakeholder initiatives, such as the ICMM guide, limits their effectiveness. Industry actors have pointed out that the responsibility for establishing changes in practice should be shared with governments (Getty & Morrison-Saunders, 2020; Syahrir et al., 2021).

A research project covering policies around mine closure from ten mining jurisdictions⁹, found that the governance of social aspects is a major challenge as most regulations were focused on biophysical aspects of closures and whereas there was general practical guidance about social performance during operations, none had specific provisions about the socio-economic aspects of closure (Kung et al., 2020). Gregory (2021) performed a similar study focusing on legislation in the Andean region, Table 2-2 covers a round-up of the findings regarding mine closure requirements in the reviewed legislation, with adaptations to include the Dominican requirements.

Table 2-2: Mine closure requirements in six Andean states, with requirements for consultation, public participation, and social dynamics in closure.

	Mine closure provisions in within Environmental Impact Assessment	Specific mine closure law	Financial mechanism for closure in legislation	Closure and relinquishment requirements	Requirements for public consultation
Colombia	Closure plan	No*	Insurance policy	Physical restoration to original or alternative	No
Ecuador	Environmental management plan	No	Bank guarantee or insurance policy	Rehabilitation and revegetation; physical and chemical stability; post-closure monitoring	Final closure plan must include social impact assessment, compensation plan, and plan to incorporate new forms of economic development

⁷ Greenwashing is the act of misleading consumers regarding the environmental practices of a company (firm-level greenwashing) or the environmental benefits of a product or service (product-level greenwashing) (Delmas & Burbano, 2011).

⁸ Supply side referring to mining companies and demand side refers to traders, smelters, manufacturers, and end-use companies.

⁹ Brazil, Chile, New South Wales-Australia, New Zealand, Ontario-Canada, Peru, Philippines, Queensland-Australia, South Africa, Western Australia-Australia.

Peru	Closure plan and environmental management strategy	Yes	Bond or trust	Physical rehabilitation (except those that will be used in future, which require an offset project– e.g., reforestation); post-closure monitoring	Publication of closure plan in regional & national newspaper. Possibility for land-use agreements to negate closure requirements (where communities and/or government have interest and prior arrangement)
Bolivia	Closure and restoration plan	No	Reserve maintained annually	Physical rehabilitation and chemical stability	No
Argentina	Environmental management plan*	No*	No	Rehabilitation, restoration, or re-composition of altered environment	No
Chile	Closure plan	Yes	Bonds or Insurance policy	Physical and chemical stability; post-closure monitoring; post-closure fund	Public dissemination of closure plan for large-scale operations
Dominican Republic	Closure plan	No	Insurance or bond	Ensuring land stability, reforestation considering biodiversity, prevent water and air contamination	Public presentation of EIA and capturing of comments to be considered before granting permits

*: Bills currently being debated.

Source: own adaptation from Gregory (2021); Regulation No. 207-98 for the Application of Mining Law, No. 146, (1998).

In addition, a lack of collaborative planning was identified, not only between industry and governments, but also among government levels as regional and municipal actors are not always involved (Getty & Morrison-Saunders, 2020; Gregory, 2021). Notwithstanding, case studies in Canada and Australia where regional officers were involved in planning processes resulted in better economic diversification post-closure (Monosky & Keeling, 2021; Syahrir et al., 2021). Managing infrastructure and land use post mining, as well as ensuring access to services provided by the mine in remote areas are issues related to sub-national authorities and urban planning (Syahrir et al., 2021). The reviewed literature suggests that these decisions about post-closure repurposing should be made at development stage of the mining lifecycle and consider the local contexts, upkeep capacity and necessities, as well as accounting for service provision (Peck, 2005). These evaluations, however, are often not included in legal requirements or avoided due to time pressure and the anticipation to reach operation stage of a mine’s lifecycle (Bainton & Holcombe, 2018).

Legal frameworks and local-level agreements with communities in Canada and Australia are deemed to include more post-closure socioeconomic provisions than those in less rich economies, this can partly be due to the legislation regimes of both countries and their higher perception of transparency (Kung et al., 2020). Other sources point out that apart from itemizing the elements that need to be included in the mine closure plans, there is little to no

guidance or information on how to meet these requirements in their regulatory frameworks (Bainton & Holcombe, 2018).

Findings from an assessment of Australian policies and practices around mine closure, highlight that mine closure plan has been integrated into the environmental impact assessment (EIA) process, which is part of the project approval stage, similar to practices collected in Andean countries (Gregory, 2021). According to Getty & Morrison-Saunders (2020), some success factors include the similarities between the two processes, both of which aim to identify risks in environmentally complex systems and are best performed when started in the early planning stages, allowing for monitoring and an iterative process. Nonetheless, a similar study including seven African countries¹⁰ also encountered that faced challenges with ensuring transparency in financial reporting and identified that a possible integration with voluntary responsible mining initiatives could facilitate the publication and availability of financial information (Morrison-Saunders et al., 2016).

In Australia, the approval process is governed by two agencies, the Environmental Protection Authority (EPA) and the Department of Mines, Industry Regulation and Safety (DMIRS), which have different target areas. While the EPA's focus is on environmental legacies, the DMIRS looks more closely at operational feasibility, including financial aspects. This can lead to parallel processes and a perception of unnecessary procedures from industry actors' perspective, leading to initial mine closure plans committing to unrealistic outcomes simply to obtain project approval and highlighting the need for more integration of the agencies' goals and focuses (Getty & Morrison-Saunders, 2020; Morrison-Saunders et al., 2016).

Regarding the funding of rehabilitation activities, Australia's Mining Rehabilitation Act published in 2012 establishes a central Mining Rehabilitation Fund, financed through the annual contributions from the mining industry based on the disturbed areas, where non-rehabilitated land would cost higher premiums. The accumulated interests are purposed for the rehabilitation of historical abandoned sites (Getty & Morrison-Saunders, 2020).

2.1.4 The Participatory Aspect of Mine Closure

Gregory (2021) offers some reasoning behind the general shortcomings to the administration of mine closure from both mine representatives and policymakers, referring to it as the tendency to 'rendering technical' mine closure planning, with the goal of reducing societal complexities to specific problems that can be addressed with technoscientific and legal solutions. In theory, this process is useful in de-politicizing mine closure, however in practice it entails a normative process that relies solely on the opinion of those considered as 'experts' and on centralized decision making. As stated in Chaloping-March (2008, p. 864), quoted in Bainton & Holcombe (2018): "mine closure is more than a managerial technical-engineering aspect within the lifecycle of a mine. It is a social episode in the lives of individuals, households, families, communities, and local governments".

Therefore, mine closure must be seen as a dynamic process, requiring the participation of multiple stakeholders. It is important to bring up the concept of mineral governance, which will be further elaborated in the next chapter (section 3.1.1) as part of the theoretical framework guiding the data analysis.

¹⁰ Ghana, Kenya, Nigeria, Mozambique, South Africa, Tanzania, and Zambia.

2.2 The Context of the Dominican Republic

The Dominican Republic is the second largest country in the Caribbean sub-region, sharing the island with Haiti. Although gold mining was prominent during Spanish colonization of the island in the 1520s, the formal beginnings of Dominican mining industry can be traced back to the early 20th century, notably with ferronickel exploitation in 1950s (Haggerty, 1989). The Ministry of Energy of Mines (MEM) is the leading regulatory body of the mining sector alongside the General Directorate of Mining (DGM, for its Spanish acronym), supported by the Ministry of Environment and Natural Resources (MIMARENA, for its Spanish acronym) and the General Directorate of Internal Taxation (DGII, for its Spanish acronym) (EITI-RD, 2022).

Since 2015 the Dominican Republic has joined the Extractive Industries Transparency Initiative (EITI), a platform structured under the EITI Standard that promotes open access to mining contracts, payments, tax contributions as well as serving as a dialogue among different actors around mineral governance, namely government, mining sector, and civil society groups.

The DR has exploitable metallic mineral resources, rocks and minerals for construction, ornamental rocks, organic resin, and semiprecious gems available in non-metallic form. Standing out deposits of gold, nickel, copper, bauxite, zinc, and silver as well as limestone and granite. Geological formations located in the Central and Eastern mountain ranges, in the Central Cibao and Southern Cibao, and in the Bahoruco mountain (EITI-RD, 2022). Both variants of the case study that were analysed in this thesis are large-scale metallic mining projects, as classified under the ministerial guidelines from the Ministry of Energy and Mines.

2.2.1 Alcoa, a Mine no Longer in Operations

Alcoa Exploration Company's concession for open-pit mining in the province of Pedernales was granted in 1945, starting operations 1958, it's one of the oldest productive activities of the area and the first international large-scale mining project in the DR (Gómez-Valenzuela et al., 2021). After its closure due to disagreements with the central government and unfavourable conditions in the international bauxite market, affecting the profitability of Dominican operations in 1984, formally renouncing concession rights (EITI-RD, 2022; Sagawe, 1989). Other sources attribute Alcoa's to the competitive production aluminium in Australia based on new technologies to produce with lower energy consumption.

There were four big bauxite producers in the Caribbean: Jamaica, Surinam, Guyana, and the Dominican Republic. In 1972, Jamaica which was the second largest bauxite producer propelled the creation of the International Bauxite Association (IBA), an initiative that was partly motivated by the opportunity to increase the Jamaican shares of the bauxite exports, which was entirely handled by US and Canada-owned companies, seeking to emulate the organization of petroleum producers through Organization of the Petroleum Exporting Countries (OPEC). Jamaican officials pushed forward a reform to increase the country's income from the exports of bauxite and aluminium, until negotiating to buy the majority of the shares from foreign investment companies (New Internationalist, 1980). The Dominican authorities were able to renegotiate the terms of the contract with Alcoa to gain more flexibility to take advantage of rising bauxite prices (Peña & Lizardo, 2018).

Organized under IBA other bauxite exporting countries were driven to take on the same tactics. However, with Brazil and Australia as large producers, those not belonging to IBA began to compete with lower prices. At that time Jamaica, Surinam reverted the measures and Guyana closed its operations. In the case of the Dominican Republic, the government did not reverse the measures, which, combined with the fact that the quality of the bauxite produced in the country was not optimal, significantly reduced its competitive capacity.

Alcoa's exit from the country was a broadly contested event. The actors interviewed have very different positions on the implementation of Alcoa's exit from Pedernales and what corresponded to closure actions. For governmental actors, and some activists, it represents an example of badly performed mine closure, while the collected accounts of former Alcoa managers provide new inputs. Figure 2-3 illustrates the timeline of bauxite operators in Pedernales.

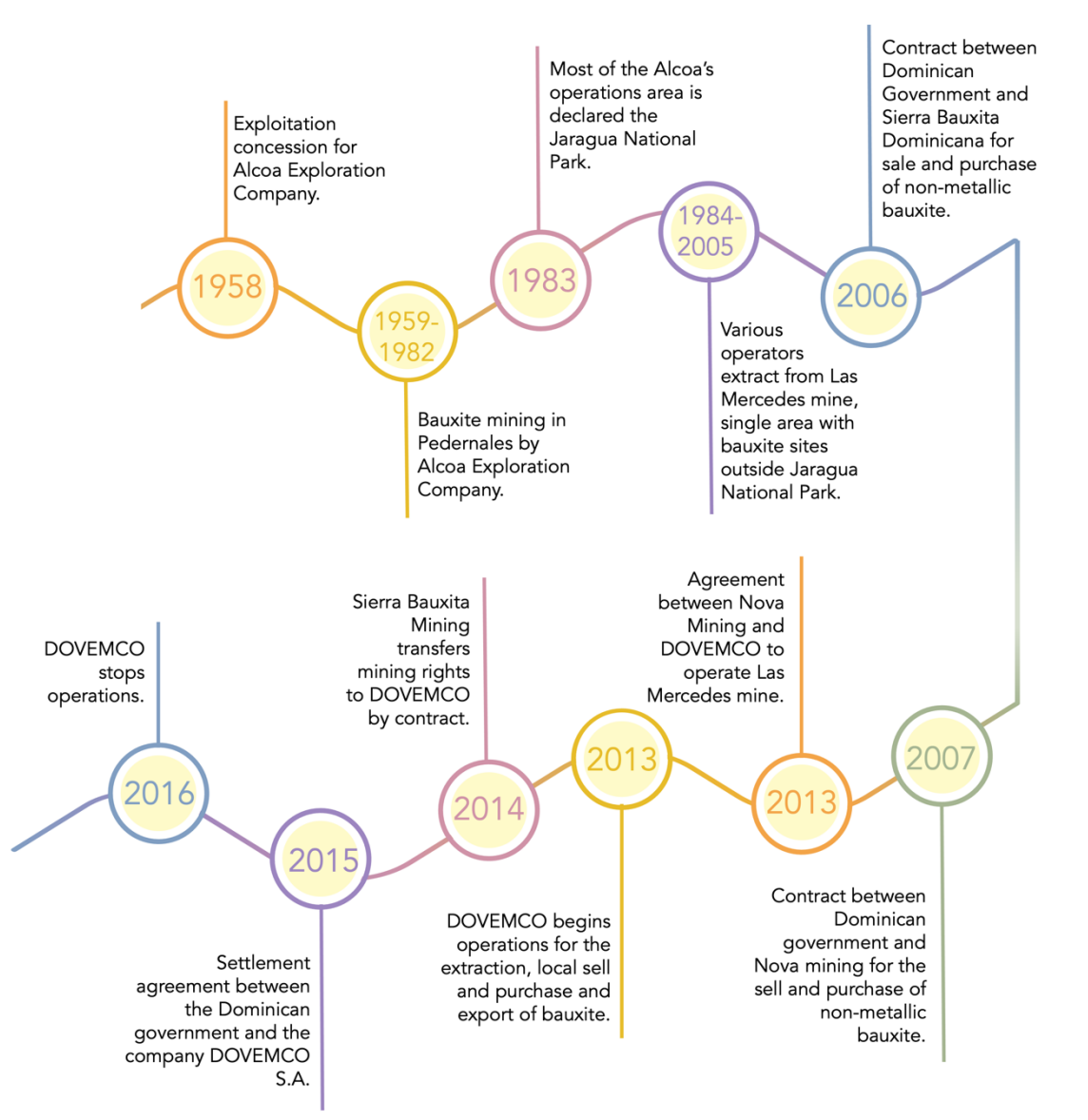


Figure 2-2: Timeline of bauxite operations in Pedernales.

Source: EITI-RD (2022)

2.2.2 Cormidom, an Active Mine

Corporación Minera Dominicana, S.A.S. (Cormidom) operates mineral explorations in Cerro de Maimón, Dominican Republic with a concession area of 3,391 hectares (Perilya, n.d.). It is a subsidiary of Australian company Perilya Limited, which operate under Chinese-owned Shenzhen Zhongjin Lingnan Nonfemet Co., LTD (Cormidom, 2021).

Operations in Cerro Maimón started in 2008, its main produce are cooper and zinc concentrates, although the concession area also has gold and silver deposits. It initially operated open-pit mines, but in 2016, after studies of the mined resource, they decided to convert the extraction method to underground mining, this being the first operation of its kind in the country and extending its lifespan until 2036.

Climate Neutral Now, which is a voluntary initiative that promotes and recognizes actions to estimation and reduction of carbon footprints part of United Nations Framework Convention on Climate Change (UNFCCC, n.d.), has endorsed Cormidom as the first Dominican company and the first mining company to be ‘carbon neutral’ under their initiative (Cormidom, 2021). As part of their closure and reclamation plans, Cormidom performs ‘concurrent reclamation’, a method that involves simultaneously reclaiming areas while developing extraction sites in other parts of the mine. The area is re-vegetated with preserved top-soil and native plants (Perilya, n.d.). Figure 2-3 shows a timeline of Cormidom’s operations.

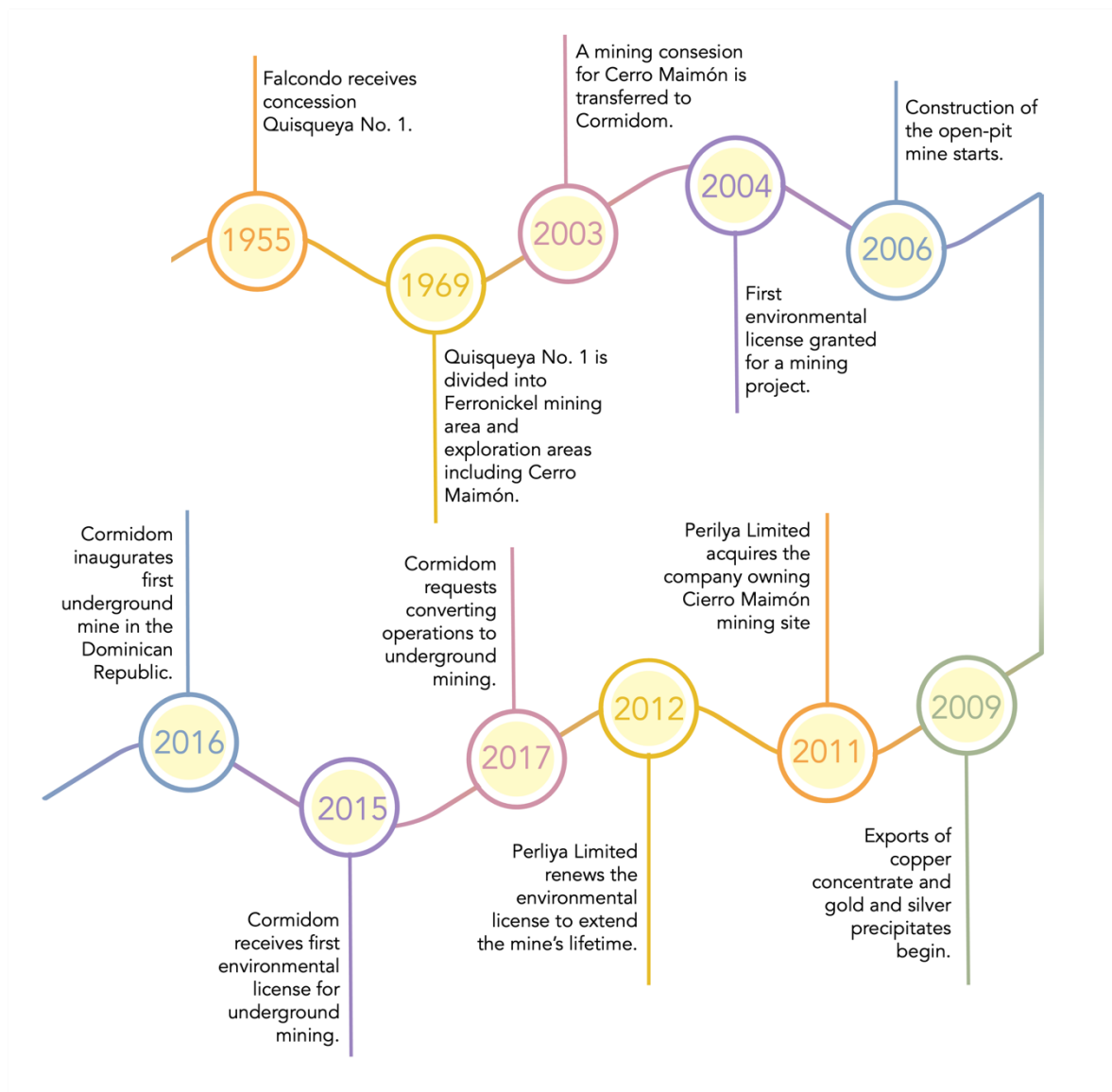


Figure 2-3: Timeline of Cormidom’s operations in Maimón.

Source: EITI-RD (2022)

3 Theories and Conceptual Framework

I employ a conceptual framework that draws upon the concept of inclusive development and policy analysis in the form of theory-based evaluation. I define the theoretical grounding of these concepts and describe how they intertwine into my conceptual framework and serve as a guide to study the socio-economic aspects of mine closure in the Dominican Republic.

3.1 Inclusive Development

I employ the concept of ‘inclusive development’ to understand how mining activities can contribute to long-lasting growth even after closure. Gregory (2021, p. 4) separates it from ideas of ‘development’ based on material gains, defining it as: “a process that favours economic diversification, emphasizes social and environmental justice, and expounds possibilities for participation in all levels of government”.

The term was first introduced in publications from the Asian Development Bank in 2007, garnering attention as a strategic approach for poverty reduction through equity and empowerment based on human capital development, social capital development, gender development, and social protection (Rauniyar & Kanbur, 2010). Bebbington (2015) elaborates on particularities of space, scale and time that are characteristic to mineral and oil extraction, pointing out arrangements around institutional change¹¹ under which resource extraction could drive inclusive development. Arguing that such arrangements materialize in the form of coalitions driven by both internal and external factors, and through the analysis of cases, Bebbington suggests some political processes that would enable scenarios where resource extraction contributes to inclusive development.

Figure 3-1 shows the relationship between the concepts of inclusive development and sustainable development. Both terms are different to one another in that, when it comes to facing trade-offs, sustainable development tends to favour material and economic growth, while inclusive development emphasizes social and environmental aspects (Gupta & Vegelin, 2016). Figure 1 also illustrates how concepts of ‘green economy’, ‘green growth’ and ‘ecological modernization’ that promote economic growth within environmental limits, exclude social aspects from sustainable development, while the conceptualization of inclusive development is closely linked to counter-neoliberalism policies¹² and reducing inequalities (Gregory, 2021; Gupta et al., 2015). On the other hand, inclusive development differs from inclusive growth in that the latter only considers the ‘inclusiveness’ of marginalized groups – such as the poor, disabled, women, indigenous people – for the creation of jobs, income increase and competition stimulation (Pouw & Gupta, 2017). Inclusive growth aspirations are largely reliant on trickle-down economics¹³ and economic indicators such as gross domestic product (GDP), focusing on market interventions and eliminating barriers to market growth (Gupta et al., 2015; Dekker & Pouw, 2022). Also inadequately concerned with absolute, rather than relative poverty (Gupta et al., 2015).

¹¹ Although definitions of institutions and institutional change are ambiguous and at times conflicting, theories generally are concerned with ‘design-based’ and ‘evolutionary’ approaches to drive change in institutions, as well as understanding resistance to change (Kingston & Caballero, 2009).

¹² During neo-liberalization, access to public services and the administration of national resources were privatized; trade tariffs were lowered unilaterally, bilaterally, and regionally and as a part of global agreements; and subsidies and price regulations were eliminated, which increased inequalities (Bull, 2013; Rodríguez, 2021).

¹³ Trickle-down economics policies propose that providing benefits and tax-cuts for corporations and the wealthy would eventually ‘trickle down’ and benefit the overall population. It’s closely related to supply-side economics in that it foresees an increase in company investments and employment. Critics argue that an such economic structure without tax-cuts for lower-income groups increase inequality (Kenton, 2022).

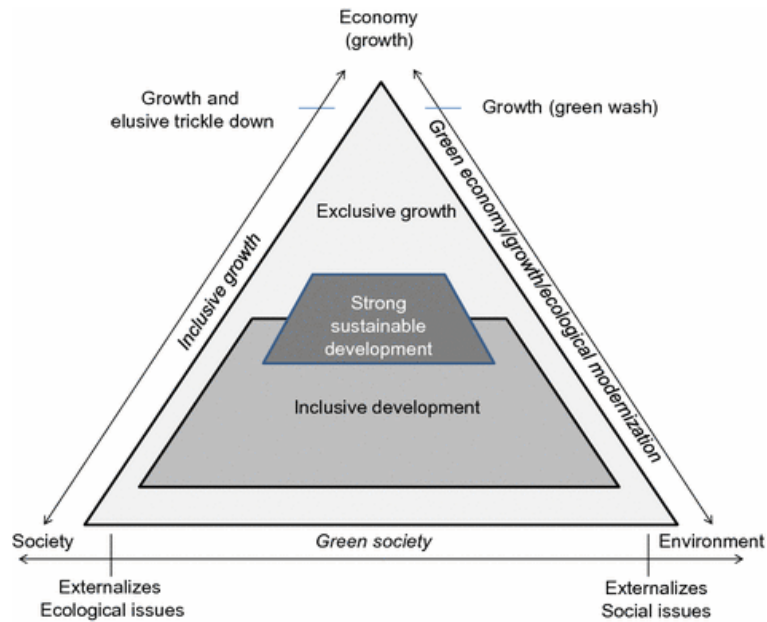


Figure 3-1: The relationship between inclusive development and sustainable development.

Source: Gupta & Vegelin (2016)

Gupta et al., (2015) proposes a theoretical framework which builds on the concept of Inclusive Development and presents three vehicles for its implementation:

1. **Developing relevant epistemic communities and communities of practice and social movements.** This includes transitional communities that engage in development studies, generate ideas, circulate, and contest knowledge, and learn iteratively along with practice. Not exclusive to academia, it includes policymakers and non-state actors since palpable changes in society are expected to occur in a response to social movements, from global negotiations and local development interventions alike.
2. **Transforming governance into interactive governance to enable empowerment.** Although non-governmental actors participate in service provision to an extent, certain services such as the law systems and urban management warrant government steering to guarantee fair distribution, non-exclusiveness, and non-rivalry principles. In order to tackle inequalities, governance systems have to be recognized as an adaptive and complex process that includes, but also goes beyond, government. This vehicle calls for good governance that includes “the rule of law, participation, accountability, equity, efficiency, effectiveness, responsiveness, a strategic vision, coherence and respect for human rights” (ibid., p. 549).
3. **Adopting appropriate governance instruments.** Inclusive development can be enacted through regulatory, economic (e.g., micro-credits), suasive (e.g., codes of conduct), technological (e.g., crop diversification), procedural (e.g., stakeholder engagement in policymaking), management (e.g., community-based fisheries) and cooperative instruments (e.g., technology transfers, dismantling offshore tax havens). Regulatory instruments driving inclusive development include decentralization and subsidiarity, which can only be effective with a corresponding shift of resources and capacity to ensure responsible commitments. They also include legally binding

principles such as human rights and equity, as well as normative social norms that promote compliance, for example, voluntary certifications. Other instruments included mandatory standard-setting and inclusion targets, addressing customary land rights and targeted subsidies, and social security schemes.

Consequently, the theoretical framework proposed by Gupta et al., (2015) aims to make the concept of inclusive development as an instrumental tool for change that can reach both technocratic and socio-economic dimensions by “[questioning] the fundamentals of unequal societies and an unequal world and [trying] to bridge the contradictions in pluralist rule systems. In doing so it opens up the black box of interrelations between the rich and the poor” (ibid., p. 553). The elements of the framework are illustrated in Figure 3-2.

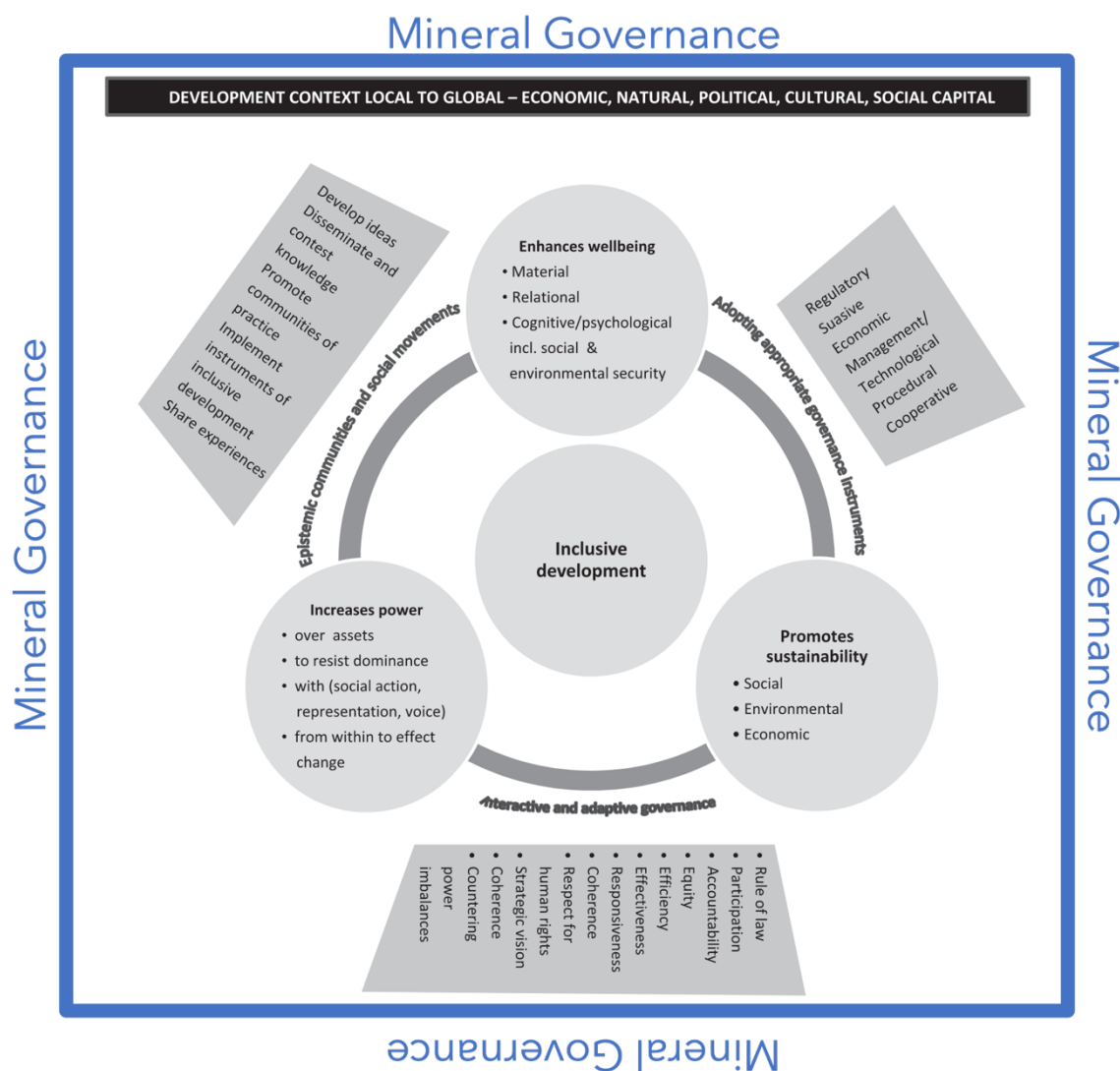


Figure 3-2: Components and conditions for inclusive development.

Source: adapted from Gupta et al. (2015)

3.1.1 Concepts and Theories Relevant for Inclusive Development

In this section I elaborate on concepts that are related to inclusive development that will aid in understanding the distributional dimensions of the overall conceptual framework I propose for this thesis.

Mineral Governance as an Element and an Enabler of Inclusive Development

Mineral governance refers to the framework of regulations, voluntary initiatives, norms, and practices that guide how power and responsibilities are exercised, how decisions are taken and how the sector's stakeholders participate in the management of natural resources and their benefits (Christmann, 2021; Graham et al., 2003). Governance in itself is an iterative process, within the inclusive development framework Gupta et al. (2015) it requires constant interventions, and coordination so it can lead to equitable and sustained and overall, inclusive development.

Recognizing the needs of different stakeholders, as well as their perspectives on the generation of value in its various dimensions, is an essential part of participatory governance. This is especially crucial in the dynamics among actors involved in the governance of natural resources, where the public, private, and civil society sectors take part (Bocken et al., 2015). Considering the systematic perspective of mineral governance as encompassing the actors, components, and conditions for the holistic management of natural resources and their benefits, can serve as an overarching conceptual playground towards the research aim of bridging mine closure and inclusive development.

Dilemmas with Stakeholder Participation

The importance of stakeholder participation when it comes to natural resource management has continuously appeared throughout literature (Fernandez-Caamano & Johnson, 2005; Gregory, 2021; Reed et al., 2009; Syahrir et al., 2021). It is often considered as a mechanism to achieve good governance (Gupta et al., 2015), and in many jurisdictions recognized as a legal right (Gregory, 2021; Kung et al., 2022), however, some limitations are noted within the advocacy for inclusive development. Orchestrating truly inclusive stakeholder engagement can be arduous, not only because it requires a segmentation to decide who is included – because it's not possible to include all of society –, but it also involves high transaction costs at both local and global level (Domínguez-Gómez & González-Gómez, 2021; Gupta et al., 2015). The emergence of coalitions also faces challenges in defining principles in negotiations, securing, and allocating resources, and agreeing on definitions of 'equity' and 'sustainability'. This occurs even if coalitions are aligned by similar identities and worldviews (Bebbington, 2015).

Environmental and Social Justice

Social and environmental justice are concepts that are also intertwined with the vehicles for inclusive development proposed by Gupta et al., (2015). The environmental justice movement stands against to the unequal distribution of the effects environmental degradation to the detriment of disadvantaged communities (Mohai et al., 2009). It's also grounded on a dimension of social justice, advocating for community recognition and participation, and political action to address socio-economic inequalities that enable environmental injustice (Schlosberg, 2011).

Development Theories

The concept of inclusive development becomes important in my analysis due to the prominence of political discourses that unifies extractive industries with development agendas (Gregory, 2021). Furthermore, it helps to understand if there really could be socio-economic development resulting from mining industries, under what conditions it could manifest itself and how it translates from political discourse to public policies, as well as real-life applications.

However, there are other theories that motivate my research and are somewhat predecessors of inclusive development or can be considered as the theoretical predicament that it strives to answer. Development theories, e.g. dependency theory, world-system theory, surged not solely as a means to explain economic growth, but also to examine how the way in which economic systems are organized (Harriss, 2013). This school of thought argues that the wealth of the ‘developed’ (or ‘core’) countries has been built through the extraction of surplus value and resources from the underdeveloped and developing countries (the periphery), classifying it as an act of exploitation (Warf, 2001). This has been enabled by various mechanism and relationships of unequal exchange that undermine the capacity of the periphery to compete with the core, such as price inequalities, subsidised exports, corrupt governments, and forceful policies such as structural adjustment programs pushed by the International Monetary Fund (IMF) that cut public sector spending (Hickel et al., 2021).

These schools of thought converge in that the afore mentioned historical factors have convoluted as direct causes of inequalities in low-and-middle income countries, a paradigm that is echoed in the historical lack of social (and even environmental) considerations of mining industries and particularly mine closure (Forget & Rossi, 2021; Gregory, 2021; Syahrir et al., 2021).

3.2 Theoretical Lens for the Policy Analysis

As the goal of my thesis is to find trajectories for inclusive development spawning from mining activities, the assessment of how policies address mine closure is a crucial part of this research. By using a method of policy analysis (also referred to as policy evaluation) as guiding framework, I strive to strengthen my research with a well-tested methodology. Because of the broadness of policy analysis as a research field, I lay out the concepts that are informing my approach.

As conceptualized by Fischer, public policy analysis is “a form of practical deliberation concerned with the full range of empirical and normative issues that bear on policy judgment” (1995, p. 2). To this end, the author also provides a scheme of four inter-related discourses for said ‘practical deliberation’ with the intention of outlining a policy analysis that is more socially relevant and serves towards normative commitments. The ‘Systems Discourse’, which “turns to an evaluation of the instrumental consequences of a policy goal and its normative assumptions for the extant social system as a whole” (Fischer, 1995, pp. 111–112) informs the theoretical grounding of my research. Which, along the lines of Dunn’s ‘Evaluation’ type of policy-analytic methods, it is explained as a “[contribution] to the clarification and critique of values driving a policy, aid in the adjustment or reformulation of policies, and establish a basis for restructuring problems” (2014, p. 323).

The focus of my analysis is on the ‘instrumental consequences’ put forth by Fischer (1995), I primarily assess the instrumentality of a mix policies towards achieving inclusive development – within the parameters established in the framework by Gupta et al. (2015) – as a value for mining communities through the socio-economic considerations of mine closure. My assessment follows a mix of policies and not a single document due to the inexistence of a single mine-closure-focused policy in the DR. The policy mix, detailed in section 4.2, covers mining, environment, and development policies.

The evaluation I carry-out doesn’t fully fall into either ‘ex-post’ or ‘ex-ante’ types of analysis since I analyse a mix of polices, including some that have been in place for various decades, some more recent and some proposals that are not published yet (Dunn, 2014). Additionally, as mentioned section 2.2, this research will also be informed through case studies and the selected variants include both a case of a closed mine and a mine still in operation.

3.2.1 Theory-Based Evaluation and Intervention Theory

Theory-driven evaluations is an approach to conduct policy analysis, that is referred to with different variations in name and definition, the shared notion being that detailed assumptions driven by a theory can explicate the causal mechanisms of a policy intervention and, thus how outcomes come to be (Mickwitz, 2003). It is defined by Rogers et al. (2000, p.5, as cited in Coryn et al., 2011, p. 201) as “...an explicit theory or model of how the program causes the intended or observed outcomes and an evaluation that is at least partly guided by this model” where the ‘program’ refers to the policy intervention or instrument being evaluated.

The representation of the model in theory-driven evaluation takes shape in an ‘intervention theory’, referred to interchangeably as ‘program theory’. Commonly presented as diagrams that illustrate the relationships between the elements of a policy intervention, they serve as a guide to understand how a policy has been implemented and what types of effects it has had (Mickwitz, 2003).

Intervention theories can vary in their complexity. Earlier proponents favour linear models, as Donaldson (2007), while other authors propose non-linear models that integrate systems thinking such as Chen (2005), where contextual and other factors can sometimes influence implementation and outcomes (Coryn et al., 2011), as illustrated in Figure 3-3. The most common elements include: (a) inputs, the necessary resources to implement a program; (2) activities, the actions carried out; (3) outputs, the immediate results of the actions, (4) outcomes, the changes that occur directly or indirectly from the inputs, activist, and outputs, which can be initial, intermediate, and ultimate.

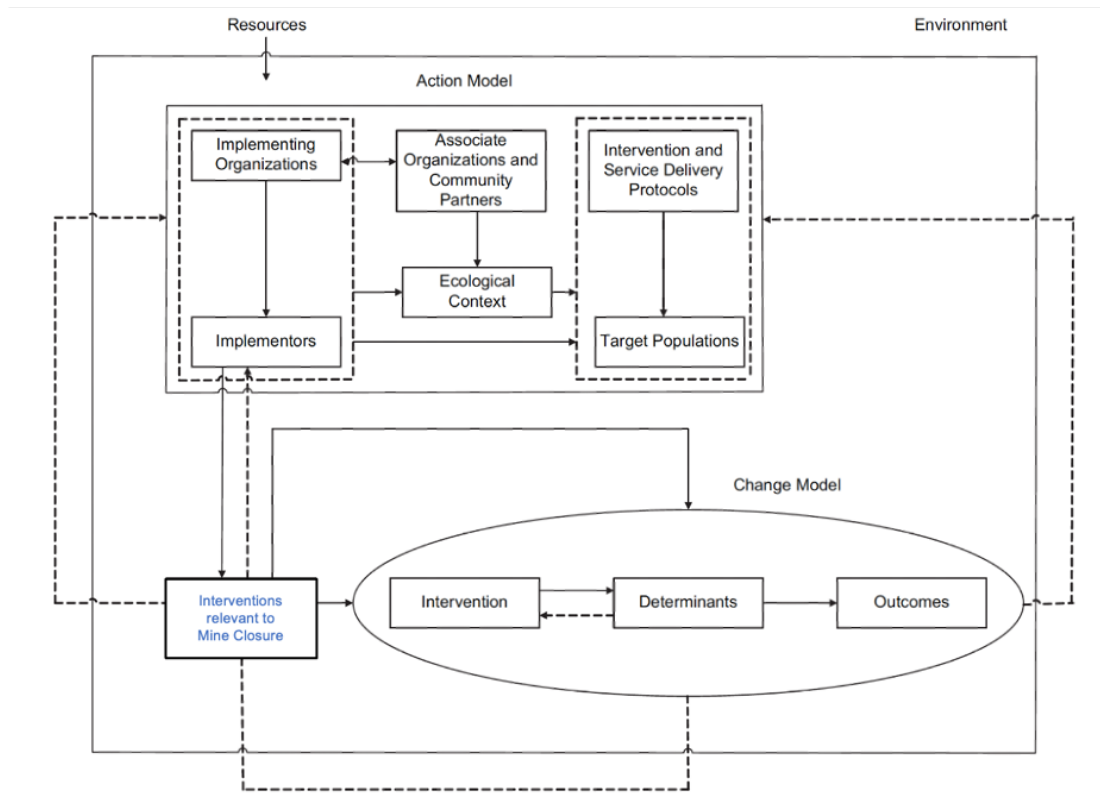


Figure 3-3: Nonlinear program theory model.

Source: adapted from Chen (2005)

The two most important functions of intervention theories are: (i) establishing the intended effects and target area, and (ii) determining outcomes, outputs, and casual links for data collection. The intervention theory will later aid in interpreting results and testing assumptions (Mickwitz, 2003). In this thesis the main assumption being investigated is that not including socio-economic aspects in mine closure hinders the attainment of inclusive development from mining activities. I am thus focusing on unanticipated effects of distributional aspect that can increase inequalities once mining activities cease.

In its 4-stage comprehensive typology of practical program evaluation, Chen (2005) strongly favours stakeholder-oriented theory formulation, where the researcher serves as facilitator as the main source for the intervention theory. Donaldson (2007) on the other hand, outlines three other potential sources: (1) previously researched theories, (2) implicit theories of actors involved in the program – similar to Chen’s – (3) direct observation of the program’s performance and (4) exploratory research to test assumptions. Through my case-study I will rely on key actors’ inputs and research for testing assumptions. This thesis will dedicate close attention to the actors involved in the implementation process, however prior to data collection and analysis it is not possible to foresee exactly the level of detail with which the different types of outcomes can be collected, beyond whether they consider the promotion of inclusive development.

By looking a policy mix targeting the mining industry, environmental management, and development strategies, through the lens of socio-economic aspects, I want to contribute to an overall holistic assessment of the regulatory framework and understand the provisions that can influence long-term outcomes of increased or reduced inequalities.

4 Research Design, Materials and Methods

In this section I outline how the research design process came together to attain the stated aims of this research project. I explain the data collection and analysis methods employed for each RQ and give a closer look at the specific sorts of data collected. Table 4-1 provides a summary of the RQs, aims and methods that are further detailed in subsequent sections of this chapter:

Table 4-1: Materials and methods to address RQs.

Overarching aim: to generate knowledge on how regulatory frameworks can effectively foster inclusive development through mine closure in the Dominican Republic.		
Research questions	Methods for data collection	Methods for data analysis
RQ 1: How is current and proposed regulation in the Dominican Republic considering socio-economic aspects of mine closure?	Document review of legal documents and semi-structured interviews.	Content analysis and change model of the intervention theory.
RQ 2: What are the interactions and responsibility distribution among stakeholders around mine closure in the Dominican Republic?	Literature review and semi-structured interviews.	Content analysis and action model of the intervention theory.
RQ 3: What strategies during a mine’s lifecycle could best lead to outcomes of inclusive development once mining activities cease?	Literature review and semi-structured interviews.	Content analysis guided with Gupta et al.’s (2015) theory for inclusive development.

Addressing RQ 1 and 2 will contribute to documenting practices and processes that have historically been developed ad-hoc –without necessarily following predetermined regulations or certifications– and to gain an understanding of the current state of mine closure planning in the DR through the selected case studies. The purpose of RQ3 is to understand how socio-economic crises can be avoided when a mine ceases to operate.

4.1 Research Design

The research approach will be qualitative, with a deductive-inductive data analysis following predetermined themes based on the defined conceptual framework while also finding patterns in the collected data to grasp different complexities (Creswell & Creswell, 2018). I am conducting this research through the lens of a transformative worldview, looking to understand how the processes related to mine closure can be improved to achieve inclusive development. Although both mine closure and inclusive development are subjects of research that could be analysed with a quantitative approach, for the particular context of the Dominican Republic, there is not enough documented data available on mine closure procedures, nor on the mining communities post closure, embarking on such research would also entail time and financial resources. Moreover, the exploratory nature of this research relates to the identified gap of practice regarding socio-economic aspects of mine closure (Bainton & Holcombe, 2018; Gregory, 2021; Kung et al., 2020; Syahrir et al., 2021), and it can serve as a motivator to conduct future in-depth qualitative and quantitative studies on the matter.

Research design will be an exploratory case study of mine closure in the Dominican Republic and research instruments will be semi-structured interviews and documents. The three most recognized types of case studies are exploratory, descriptive, and explanatory (Yin, 2003) even though the categories may overlap each other, in this research I will take an exploratory approach, “to explore those situations in which the intervention being evaluated has no clear, single set of outcomes” (Baxter & Jack, 2015, p. 548). Case-study as a research strategy is suitable for studying a phenomenon in its real-life context specially when the boundaries between the contextual conditions and the phenomenon are not obvious (Yin, 2003). The design of the case study will take the form of a single case with embedded units, allowing to the researcher to consider different sub-units within a broader case and gather a holistic set of data (Baxter & Jack, 2015). The case-study considers two variants: an already closed bauxite mine and an operating gold mine, the purpose is to aggregate the identified variables from both cases into a rich synergic analysis of the socio-economic aspects of mine closure in the Dominican Republic. The literature review presented in Chapter 2 provided background information and context to guide the selection of case studies. It also provided knowledge useful in framing interview questions and improving rapport with interviewees.

The strength of a qualitative research approach is its appropriateness for “exploring and understanding the meaning individuals or groups ascribe to a social or human problem” (Creswell & Creswell, 2018, p. 41), moreover taking two variants of case studies is suitable because they “epitomize a broader category of cases” (Bryman, 2012, p. 70), providing a suitable context to examine a social process (mine closure) and study the implications of theoretical concepts (inclusive development), as I seek to do through my aim and RQs.

Some possible limitations to my research design include its reliance on interviews. Topics related to mining in the DR tend to be perceived as political and sensitive. Although biased responses and subjectivity are inherent to interviews as methodology, it warrants extra care in formulating questions and ensuring a diverse roster of participants. Additionally, recent statistical data, detailed economic assessments of the mining industry in the DR and valuation of ecosystem services in mining areas may not be accessible or exist.

4.2 Methods for Data Collection and Materials Collected

The collected data will be triangulated, relying on various sources, as it’s characteristic of case studies (Yin, 2003). Data will be collected through legal documents and key informant semi-structured interviews.

The General Law for the Free Access to Public Information of the DR allows the researcher to access legal documents. As previously indicated, there are no laws specific to mine closure in the DR legislature, thus a collection of legal documents was analysed to extract the parts relevant to the subject of research. These include laws and regulations that directly regulate mining activities, as well as those related to environmental management and the use of natural resources. Additionally, there are laws and regulations specific to the granting of environmental licenses to commercial activities. Lastly, there are various laws and policy documents related to development vision and strategies that consider the mining industry as a means to achieve development goal. Additionally, two other frameworks were reviewed, a proposal for the modification of the mining law and the introduction of a new framework to manage revenue collected from mining. The reviewed documents are detailed in Table 4-2:

Table 4-2: *Analysed legal documents.*

Year	Title	Governing Body	Relevance to mine closure and development strategies
1971	Law No. 123-71 prohibiting the extraction of the components of the earth's crust, known as sand, gravel, grit and stone.	Ministry of Environment and Natural Resources.	Establishes controls on non-metallic mining by incorporating guidelines to grant exploration and extraction permits.
1971	Mining Law No. 146	Ministry of Energy and Mines.	Sets out the basis for the regulation of metallic mining, as well as promoting its expansion.
1998	Regulation No. 207-98 for the application of Mining Law No. 146	Ministry of Energy and Mines.	Specifies the rights and responsibilities of concession and permit holders. Requires submitting an environmental impact and reclamation assessment that includes a closure plan for granting extraction permits.
2000	General Law No. 64-00, on the Environment and Natural Resources.	Ministry of Environment and Natural Resources.	Establishes that mining activities need an environmental license to operate . Requires financial resources for mining municipalities and public bonds to ensure proper waste management and site rehabilitation .
2006	Law 498-06 on the National Planning and Public Investment System.	Ministry of Economics, Planning and Development.	Dictates the creation of Development Councils, which manage the monetary contributions from mining to municipalities (5% of mining revenue, as established on the Environmental Law).
2007	Regulation 493-07 for the application of Law No. 498-06, on Planning and Public Investment.	Ministry of Economics, Planning and Development.	Characterises Development Councils as entities charged with planning public investment in activities that promote the sustainable development of the constituency in which they operate.
2012	Law No. 1-12 National Development Strategy (NDS) 2030.	Ministry of Economics,	Recognizes Mining as a relevant sector of the Dominican economy and

		Planning and Development.	sets specific targets as part of the National Development Strategy (NDS).
2014	Compendium of regulations and procedures for environmental authorizations of the Dominican Republic	Ministry of Environment and Natural Resources.	Establishes specific guidelines and requirements to receive an Environmental License as indicated in Law 64-00, including for Environmental Impact Assessments that incorporate closure plans, and Stakeholder consultations.
2019	Environmental Standards for the operation of non-metallic mining	Ministry of Environment and Natural Resources.	Regulates non-metallic mining activity from an environmental perspective and includes the relationships with civil society actors.
2021	National Multi-year Plan 2021-2024.	Ministry of Economics, Planning and Development.	Sets strategies and indicators to meet goals set out in the (NDS) for the mining industry.
Unpublished	Draft Law on National Mining	Ministry of Energy and Mines	Seeks to unify the regulation of all types of mining. More specific on the environmental requirements for closure plan and establishes creation of the National System for the Management of Public Mining Revenue.
Unpublished	Draft Bill that creates the national system for the management of the mining state income.	Ministry of Energy and Mines	Proposes a unified framework for the management public revenue generated from the mining industry, setting investment criteria that aligns with the National Development Strategy.

RQ2 and RQ3 were conducted through primary data collection with semi-structured interviews with key interviewees fundamental in data collection since much of the inputs I sought to collect for the two variants of the case study belong to practices that have developed and established over-time, as closure processes occurred without being documented and not directly linked to any legal requirements. This is most directly linked to RQ2. While for RQ3 semi-structured interviews were instrumental in understanding how the involved actors perceived the inclusive development to take shape through mine closure.

The interview guide can be found in Appendix A. It was developed on the basis of the research questions and using inclusive development vehicles from Gupta et al. (2015) which also served as deductive codes for data analysis and are referred to in more detail on chapter 3. The

interviews were semi-structured, and the interview guides started with open-ended questions broadly covering regulation and practice in the Dominican Republic as well as its conjunctures with development processes. As the interviews progressed, I had the opportunity to ask follow-up questions and explore relevant topics that emerged iteratively.

Interviewees included environmentalists, researchers, and experts from the ministry of environment and key informants from the two mines that compose the case study. Interviewees were identified through the research and contacted directly, while others were by snowballing or introduced through references. The format of in-text citations is in according to the interviewee codes linked on Table 4-3, along with a full list of the interviewees:

Table 4-3: List of interview participants.

Interviewee Code	Date	Type of actor	Duration
I-1	1 March 2023	Mining sector. Operations Manager from Mining Company	01:04:00
I-2	3 March 2023	Government. Ministry of Energy and Mines, vice-ministry of mines	00:55:00
I-3	6 March 2023	Statesman, opinion leader, former official of the Ministry of Energy and Mines.	00:56:07
I-4	7 March 2023	Government. Ministry of Environment and Natural Resources. Direction of non-metallic mining.	00:39:04
I-5	9 March 2023	Civil Society and Academia. Researcher, environmentalist, and activist.	01:23:59
I-6	10 March 2023	Mining sector. Ex-director of closed mine.	01:13:06
I-7	13 March 2023	Civil Society and Academia. Researcher, political science, activist.	01:02:18
I-8	15 March 2023	International Initiative. EITI Secretariat.	00:31:11
I-9	4 April 2023	Government. Ministry of Environment and Natural Resources, Vice-ministry of Environmental Management.	00:38:01

I was in the Dominican Republic during the interview process and most interviews took place in person, while others took place as video-calls through the Zoom or Google Meets platforms, as per the interviewees request; this did not hinder the data collection process. The length of the interviews roughly ranged from 30 to 90 minutes, depending on interviewees availability. Participation was voluntary and consent was collected through email, by vocal confirmation or with an informed consent forms that can be found in the Appendix B. Additionally, I also had email correspondence with representatives from the Ministry of Planning, Economy, and Development.

4.3 Methods for Data Analysis

The integration of theory-based policy evaluation was mainly relevant for the RQ1, while it will iteratively inform RQ2 and RQ3. The intervention theory was illustrated following Chen's (2005) non-linear model, the theoretical framework guiding this thesis research can be found with more detail on section 3.2. The model is composed of two parts, the change model, and the action model, in this thesis research I have chosen to construct both models independently, while the change model will be illustrating RQ1, action model will represent the results of RQ2. It provides a methodology for identifying inputs, activities, outputs, and outcomes, gaining an understanding of how the mine closure process is regulated, determining the existence of socioeconomic aspects, and understanding the implications for inclusive development. Addressing RQ2 includes identifying the different actors and how they relate to each other by constructing the action model.

All interviews were conducted and recorded in Spanish, later transcribed with the support of the website freesubtitles.ai. Thematic analysis (TA) was performed with the support of the 1.7.1 version of NVivo, a computer-assisted qualitative data analysis software. The coding process was done in Spanish and all excerpts and references to the documents and interview data referred to in the subsequent chapters were translated from Spanish to English by the researcher with the assist of the website deepl.com. As the researcher and Dominican-native I have aimed at producing most accurate translation also considering nuances of colloquial speech, however the resulting translation could still be influenced by my own biases.

TA is the process of identifying patterns or themes within qualitative data that are important for the description of a phenomenon (Fereday & Muir-Cochrane, 2006; Maguire & Delahunt, 2017). TA involves organizing the data in codes, that surge as the researcher engages with the collected data. Themes are the analytic outputs developed through coding which are anchored in shared ideas or concepts (Braun & Clarke, 2021). A semantic approach is employed, where themes are identified within what participants explicitly say in the interviews, avoiding the search for implicit meanings (Braun & Clarke, 2006 as cited in Maguire & Delahunt, 2017). By taking on a deductive-inductive data analysis approach the researcher was able to perform both data-drive as well as theory-driven codes (Fereday & Muir-Cochrane, 2006), the latter based on the vehicles for inclusive development from the theoretical framework by Gupta et al. (2015), as presented in section 3.1.

TA is fitting not only to visualize different elements that bring together qualitative research, but also to understand how they are interconnected and build onto one another, which is relevant for exploratory case-studies (Braun & Clarke, 2021). The exploratory nature on this research and the TA approach characterized the data analysis process as reflexive and iterative, sometimes adjusting the organization of the assigned codes. Since the method requires deliberation to determine how the analysis is conducted, it's directly influenced by the researcher (Braun & Clarke, 2021).

4.3.1 Reliability and Validity

Reliability and validity are two criteria used to evaluate the quality of the research designs (Creswell & Creswell, 2018). For qualitative, exploratory case study, reliability is mainly concerned with the consistency of the and methods and warrants a clearly defined research approach (Bryman, 2012).

Validity is concerned with the measures to ensure accuracy of the findings (Creswell & Creswell, 2018). Construct validity refers to the use of multiple sources of data collection, which includes triangulating the data from different sources (Yin, 2003), e.g. documents and semi-structured interviews. External validity can be asserted through the use of theory as part of the research design, like the conceptual framework elaborated in Chapter 3, which enables the generalisation of the findings (Yin, 2003).

Regarding validity of research through TA, Braun & Clark (2021) point out that great amount of data doesn't equally assert validity, and alert researchers to consider enough time for data analysis and avoid "drowning in the data" (ibid, p. 15).

5 Findings

The research findings are broadly divided into two sections. The first section presents the results of a theory-driven analysis of a mix of policies, while the second section reports on the data collected through key stakeholder interviews. Both sources of data were used to construct an intervention theory based on Chen's (2005) non-linear model. The analysis of legal documents constitutes the change model, while the inputs from the interviews informed the action model that addresses RQ1 and RQ2, respectively. The results of the interviews were collected and contextualized using Gupta et al.'s (2015) inclusive development framework, which responds to RQ3.

5.1 Analysis of a Mixed Regulatory Landscape

Due to the absence of a specific legal instrument in the Dominican Republic that focuses on the regulation of mine closure procedures, similar to those in other jurisdictions such as Australia, Canada, Peru, and Chile as discussed in Chapter 2, a mix of legal instruments that regulate mining activities, environmental management, and development planning have been chosen.

Each document was carefully analysed to determine its relevance in regulating mine closure activities, with particular attention paid to social aspects and the impact on development strategies. Throughout the analysis of individual policies, relevant parts of the change model will be integrated, while the full illustration can be found in the Appendix C.

5.1.1 Existing Frameworks

Law No. 123-71, prohibiting the extraction of the components of the earth's crust, known as sand, gravel, grit and stone

The law was published mainly as a measure to regulate indiscriminate extraction. Its main stated objectives were to regulate and control the extraction rates, not including any references to 'closure' or 'development' but it establishes the Dominican State as a beneficiary of mining as a commercial activity. It is not included in the intervention theory. Only regulates non-metallic mining.

Mining Law No. 146-71

The Mining Law, No. 146-71, published in the early 70s, which recognizes minerals as a public utility and establishes their exploration and exploitation as activities of national interests. The use of land for these purposes would take precedence over other uses with some exceptions such as places of public use, places of historical interest, or irrigation canals. This law only oversees metallic mining.

It does mention the responsibilities of those who hold mining concessions to meet certain payments including patent, royalties on exports, and income taxes.

It includes a section on protection of the natural environment and water use. This chapter details the rights that the permit holders have with regard to the use of land and water, establishing guidelines for managing waste released into the environment. It states that if contamination of air or water sources in a mining area is found such operations must cease until the cause of the contamination is identified and remedied. On the other hand, it states that if the contaminated air or water causes damage to the population or hinders agriculture or livestock activities, the responsible concessionaire is obliged to compensate for the damages caused. However, this legal document, did not include a mention of closure procedures.

This law also mandated that 5% of income tax from mining be allocated to a Mining Development Fund, however there is no record of implementation. First framework is to specify the mining taxation system as well as royalties and patent payments that would constitute the mining state revenue.

Regulation No. 207-98 for the application of Mining Law No. 146-71

Regulation No. 207-98 establishes a series of specific parameters, to ensure the appropriate interpretation and application of the Mining Law, No. 146-71. This is the first legal instrument that requires an environmental impact and reclamation assessment as part of the mining permit application process. It establishes that the EIA must include, among other requirements, a closure plan. Nonetheless, there are no guidelines nor definitions of what must be covered or considered in its creation.

To document the environmental conditions of the area prior to the start of the mining activity, concession holders must generate and provide to corresponding authorities an inventory of the natural and socio-economic elements that constitute and surround the concession area. Including, but not limited to water bodies, fauna, flora, air and water quality data, agriculture, and human activities in general. The purpose of the inventory it is not specified but it would be a very important tool to be used during closure planning and reclamation procedures.

In addition, concession holders must also oversee and control soil stability and reforestation, as well as ensure proper disposal or secondary use of waste and non-usable extracted material and address any other aspects that could affect the ecosystem and its biodiversity. It establishes that the responsibilities of the concession holder will remain until 3 years after the end of the concession, except in cases where the site is rehabilitated in less time, ensuring measures that guarantee the stability of the land, reforestation of the mined areas in accordance with the native conditions of the environment and prevent the pollution of surface and groundwater bodies.

It is also noted that when assessing applications for exploitation permits, the governmental body in charge will not only consider the technical conditions of the deposits but will also consider the EIA and provisions about the closure stage. In addition, other socio-economic aspects are taken into consideration for the state in the form of employment and tax revenue generation, foreign exchange generation, the project's impact on the area where it will operate and its communities. Furthermore, there is consideration of social aspects, regarding the potential for development through financial contributions from mining as well as considering the relationship between mining and communities. Figure 5-1 illustrate the theory of change of Law no. 123-71 prohibiting the extraction of the components of the earth's crust, Mining Law no. 146-71 and the regulation for its application no. 207-98.

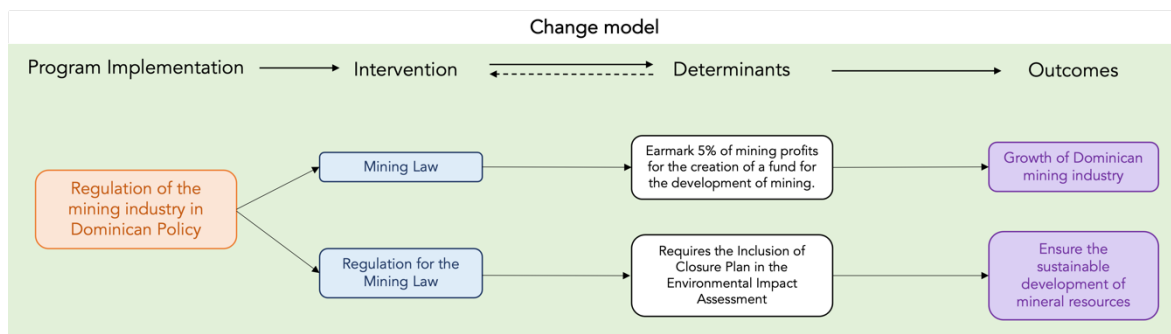


Figure 5-1: Change model of public policies regulating the mining industry.

General Law on the Environment and Natural Resources No. 64-00

The objective of this law is primarily to regulate economic activities that may cause damage to the environment, pollute ecosystems, or degrade, alter, or destroy natural and cultural heritage. It designates the Ministry of Environment and Natural Resources (MIMARENA) as responsible for ensuring the restoration of ecological damage and compensation for economic damage caused by mining activity. It also seeks to establish the means and conditions for the conservation of natural resources enabling their use on the basis of sustainable development, equity, and social justice, and recognising that their real value includes the environmental services they provide.

This law re-affirms that mining projects need to submit an EIA to apply for an environmental license. It establishes the payment of a public bond as a guarantee for the proper execution of the environmental obligations covering 10% of the estimated costs to comply with all the activities established in the Environmental Management and Adaptation Plan (PMAA, for its spanish acronym).

Establishes as obligations of the concessionaires: the proper management of solid waste, including hazardous materials, in accordance with the operational and closure plan of the project; in addition, as well as the rehabilitation of areas and surrounding ecosystems affected by mining activities or failing that, to carry out other activities aimed at protecting the environment, under the terms and conditions established by the State Department of the Environment and Natural Resources.

The concessionaires must keep the Ministry informed of their progress once rehabilitation activities have begun. The ministry will carry out its monitoring and evaluation based on the corresponding type of permit required, in the case of mining, an environmental license.

Compendium of Regulations and Procedures for Environmental Authorizations in the Dominican Republic

This compendium includes the Regulation for the Environmental Assessment Process that regulates the process of granting environmental licenses which includes the Environmental Assessment Process which covering the operational steps from application to final decision, the Regulations for Environmental Thematic Authorisations, and the Procedure for Environmental Thematic Authorisations. These instruments regulate the execution of the environmental impact study and reclamation indicated in the regulation 207-98 and Environmental Law 64-00.

According to their scale and technical conditions, mining projects can have different categories, within which the Provincial Committee of Environmental Associations, the Committee of Initial Evaluation, the Technical Evaluation Committee, or the Validation Committee can grant the environmental license based on the EIA.

The process begins with the application in accordance with the applicable requirements. Then, the Ministry of Environment produces the Terms of Reference, which establishes the guidelines for the conduct of the Environmental Impact Assessment, including a closure plan in accordance with Regulation 207-98 and Law 64-00, and a PMAA. The study is evaluated by the corresponding work unit of the Ministry of Environment and Natural Resources, and a technical review report is produced. Finally, the process concludes with the approval or rejection of an environmental license.

The public consultation process constitutes a part of the environmental assessment process, conceptualised with civil society as part of the study, and not with them as an object of study. In this, the applicants are responsible for making organizing the process and must present their environmental impact assessment in plain language making it accessible to the participants, who

will have the opportunity to submit comments on it. In addition, stakeholder analysis is used as a tool for public consultation and public hearings are presented as a conciliation tool in the event that there is any non-consensual element or conflict. MIMARENA must facilitate access to the Environmental Impact Assessment, so that the general public can make further observations.

The Directorate of Social Participation evaluates the public hearing according to some aspects in the law including, communication simplicity, representation of different groups, gender representation on impact assessment, information on negative impacts.

Once a mining project has been granted an environmental licence, monitoring is supported by the MEM and periodic submission of environmental compliance report. The validity of the environmental licence will be conditional on compliance with these instruments.

Indicating that the comments and observations received in the public consultation process will form part of the information to be considered for the decision making on the environmental authorisation applied for, and they will be annexed to the Technical Review Report. However, this does not seem to be a very rigorous process in the regulation, and it does not explicitly say that the comments presented must be converted into changes in the writing.

Environmental Standards for the Operation of Non-Metallic Mining

This framework establishes the environmental aspects in the regulation of the extraction of non-metallic minerals. It is more specific about the existence of a closure plan, stating that environmental impacts have to be considered throughout the extractive operations, including closure. It also says that the intended purpose after closure must be part of the EIA including the rehabilitation plan and it requires an internal monitoring programme. Paying particular attention to the impact on biodiversity, surface and ground water, and the soils. In addition, it says that PMAA must include the expected use of the mined area, as well as the recovery plan, for which the uses and characteristics of the surrounding area must be considered, as well as the needs of the surrounding population.

The existence of possible places of archaeological or anthropological interest must be ruled out. When the project is carried out near scarcely populated areas, indirect impacts related to human migrations must be closely examined. The requirement to carry out public consultation processes is reaffirmed.

It says that the demand for these natural resources should be evaluated in comparison to other development processes and land use alternatives in the region. It establishes that possible conflicts of use should be evaluated as well as whether the mineral extraction contributes to sustainable development of its intended location.

The removed soils and layers that contain organic components must be conserved for later use in the rehabilitation of the area. The physical rehabilitation must be continuous and begin immediately after the exploitation of an area has been completed. A topography and landscaping that resembles the natural conditions of the area must be achieved, including the recovery of wildlife in the area. Figure 5-2 illustrate the theory driven evaluation of these standards as well as the Environmental Law and the Regulation for Environmental Authorizations.

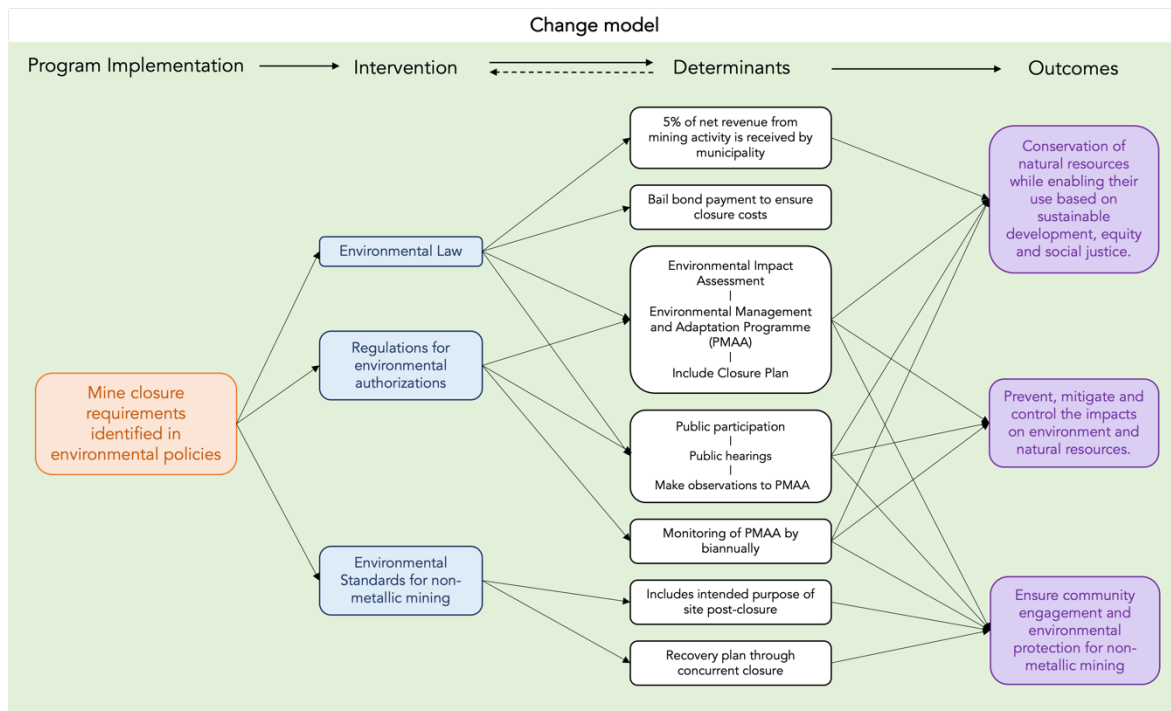


Figure 5-2: Change model of mine closure requirements within environmental policies.

Law 498-06 on the National Planning and Public Investment System

The law highlights the need for promoting equitable economic and social development, including the improvement of income distribution. To achieve this goal, a National Development Strategy must be formalized with the participation and consensus of different Dominican social actors. Additionally, the law calls for the periodic elaboration of a National Multiannual Plan.

The law creates Development Councils at regional, provincial, and municipal levels, responsible for proposing development strategies, prioritizing investment projects, and involving local communities. They also oversee projects from the central government. In provinces where mining is present, Development Councils have been delegated to administer the 5% mining contributions established in Environmental Law no. 64-00. In the case of gold mine Barrick Gold in Pueblo Viejo, Sanchez Ramirez a special Fond for the Management of Mining Revenue (FOMISAR) was created in 2005 prior to the law's implementation (EITI-RD, n.d.-a). The councils are composed of members of congress, representatives from the central government, academia, professional guilds, and the private sector. However, there is no mandatory inclusion of civil society or activist groups.

The law also aims to systematize procedures for public investment by establishing a National Public Investment System (SNIP, for its Spanish acronym). Nonetheless, there is no specific link between mining activity and public investment.

Regulation 493-07 for the Application of Law No. 498-06, on Planning and Public Investment

This legal instrument sets out specific guidelines for the implementation of the provisions of the Law on Planning and Public Investment. Regarding the Development Councils, Regulation 493-07 details the process of selection of its members, internal functioning, and the relationship between the different territorial levels.

It also includes guidelines for the elaboration of the National Development Strategy (END, for its Spanish acronym) and the functioning parameters for the SNIP, which include ensuring that public investments yield the most achievable socio-economic benefit. Nonetheless, there is still no mention of how to address income redistribution or how to ensure that the greatest socio-economic benefits are realised.

The components of the SNIP itself included methodologies for ex-ante evaluation and the assessment of social costs, project bank, technical norms and procedures on public investment and training and diffusion.

Law 1-12 National Development Strategy 2030

The objective of the National Development Strategy is to achieve an economic and productive model that not only promotes economic growth, but also generates formal employment, reduces poverty, improves competitiveness in international markets, strengthens transparency and the functioning of key institutions. It also seeks to improve the management of natural resources, risk management and adaptation to climate change.

One of the premises of the END, framed in Law No. 1-12, was that it would be conceived and developed under consensus of the different groups of society, political and economic. Under a long-term vision, it contains strategic axes, objectives, specific objectives, strategic lines of action, as well as indicators and targets to monitor the implementation of the Strategy to be achieved by 2030. However, there are no indicators for the premises related to mining sector, and the ‘sectorial plan’ for the mining industry to be integrated with this strategy, has not been created as confirmed via e-mail by a representative from the Ministry of Economy, Planning and Development (MEPyD, for its Spanish acronym). The components related to mining are summarized on Table 5-1.

Table 5-1: Mining within National Development Strategy.

Component	Postulation within the National Development Strategy
Third Strategic Axis	An economy that is territorially and sectorally integrated, innovative, diversified , plural, quality-oriented and environmentally sustainable , that creates and deconcentrates wealth , generates high and sustained growth with equity and decent employment , and that takes advantage of and enhances local market opportunities and inserts itself competitively in the global economy.
General Objective 3.5	Sectoral and territorially articulated productive structure , competitively integrated into the global economy, and taking advantage of local market opportunities.
Specific Objective 3.5.6	Consolidate a suitable environment that encourages investment for the sustainable development of the mining sector.
Action line 3.5.6.1	Consolidate a regulatory and institutional framework for mining exploration and exploitation that guarantees the sustainable development of the activity , the protection of the national interest and legal security for investment, as well as agility, equity, and transparency in the processes of obtaining exploitation rights and conflict resolution.

Action line 3.5.6.2	Produce and provide basic information to guide geological-mineral exploration to reduce risks and costs in the development of the activity, by strengthening the National Geological Service.
Action line 3.5.6.3	Promote competitiveness and the development of productive linkages in the mining activity to expand the generation of decent employment and income .
Action line 3.5.6.4	Support the development of sustainable social mining and artisanal processing by promoting the formation of cooperatives and rural associations and the training of affected micro, small medium enterprises, as well as monitoring compliance within a framework of transparency.
Action line 3.5.6.5	Promote the training of human resources for the mining activity.
Action line 3.5.6.6	Design and implement mechanisms for municipalities to participate in the income generated by mining operations , both metallic and non-metallic, established in their territory and to finance sustainable development projects .
Action line 3.5.6.7	Ensure that mining contracts guarantee due protection of ecosystems and natural reserves and of the rights of populations .

Source: own elaboration from Law No. 1-12.

The vision set out in the END includes the following items, which correspond with Gupta et al.'s (2015) inclusive development framework:

1. Equity through development.
2. Manage productive resources innovatively, quality-oriented, environmentally sustainable.
3. More diversified productive structure.

National Multi-year Plan for the Public Sector 2021-2024.

The National Multi-Year Plan for the Public Sector (PNP) is an instrument that outlines and organizes the medium-term implementation of the END for the public sector. This instrument introduces the 'quality of life paradigm', which aims to redirect public policies, the economy, and institutions towards inclusivity and visualizes economic and social development as a process that enables people to live with quality and safety as part of their daily lives.

The PNP defines access to 'formal and decent employment' as a pillar of the paradigm, and within this, mining is presented as a sustainable production sector. The mining sector is established as one of the central government's priorities for the implementation of public policies, with a high priority on employment generation. However, the vision for future job losses in the context of mining and closure planning should not be foreseen.

The prioritisation of mining policies is defined under the headline 'towards environmentally responsible mining'. It acknowledges that despite the high potential of revenue generation, particularly for foreign exchange, challenges persist in making it a sustainable, environmentally

friendly, and redistributive activity. The inherent vulnerability of an island presents a particularly challenging context.

Although there are indicators for the output of prioritized public policies, they are mainly oriented towards increasing the competitiveness of the mining industry. There are no indicators related to the objectives of improving wealth distribution or economic diversification as set out in the END.

The main issues identified for the sector are the existence of abandoned sites, negative perceptions of the country as a mining investment destination, the impact of mining on health and the social environment, and the legal weaknesses of artisanal and small-scale mining.

The mining sector requires administrative and management reforms, particularly in terms of the regulatory framework, cross-cutting coordination, and operational efficiency. Regulatory measures to achieve this prioritized policy include reformulating the draft Mining Law, enacting a new law for the mining state revenue management system, revising the regulations on the prohibition of mining of the earth's crust and mining safety, and creating a regulation on the closure of mines. The latter two have yet to be undertaken.

The indicators established to monitor these prioritized policies are (i) the amount of mining exports (increase in millions of dollars), (ii) the growth rate of formal jobs in the mining sector (not determined), (iii) the environmental impact of mining activity (water stress level), and (iv) the amount of foreign direct investment in mining. It proposes monitoring for water stress with a target of 50.3, without providing reduction targets or measurement mechanisms. On the other hand, it does not specify what index or scale of measurement this number refers to. It should be noted that the PNP covers several productive and social service provision sectors that have clearer and more detailed indicators. Figure 5-3 illustrate the intervention theory of the existing frameworks regulating development strategies, focusing on their relevance to mine closure.

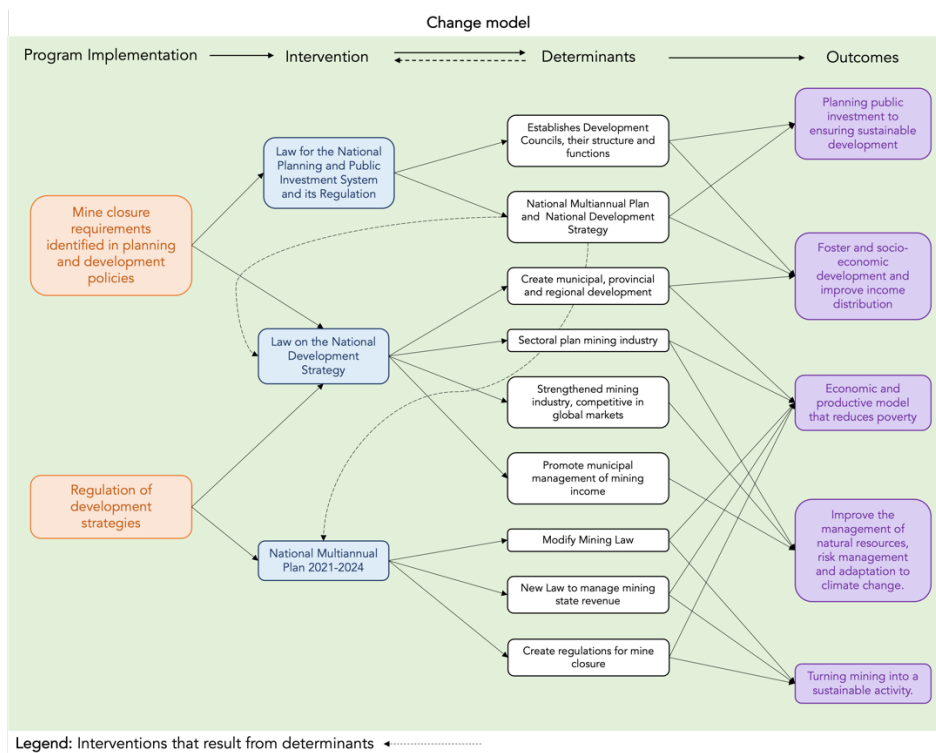


Figure 5-3: Change model of development strategies where mine closure is relevant.

5.1.2 A Regulatory Make-Over for the Mining Sector

Since 2019 the Ministry of Energy and Mining has submitted various proposals to update the legal framework of the mining industry (EITI-RD, n.d.-b). According to the interviews conducted for this thesis, there is a general consensus in that the mining law 146-71 is deeply outdated, including its omission of mine closure aspects and other inconsistencies with current institutional, technological, and socio-economic conditions of the Dominican mining sector. One of the proposals from the MEM is a modification to Law 146-7 which has been submitted for repeals, among others, regulation 207-98, in this thesis and the second is a preliminary draft for the creation of a new law creating the National System for the Management of Public Mining Revenue.

Draft Modification to the Mining Law

This law proposes more perceptible links between development and mining policies, by naming mining resources as one of the key sectors for national development and unifies the regulation of metallic and non-metallic mining.

It emphasizes that sustainability and environmental remediation criteria must be integrated into mining operations. It also states that, the benefits received from mining exploitation must be dedicated to the development of the country and the provinces where they are located. It recognises the role of mining in the attainment of the END, as well as the need for legal reforms that can enable its implementation.

It considers it the State's obligation to guarantee the improvement of the quality of life of communities located in mining areas, by encouraging forms of production that preserve their rights and care for nature, promote their inclusion and participation, and enable social and community vigilance. It also states the need for a coherent model to link the financial revenues from mining with the priority objectives of national development plans.

It defines the closure plan as a document that includes technical, political, social, and economic activities aimed at achieving social objectives, elaborating more on which physical aspects should be included to guarantee the physical security of the site.

As part of the application for an exploitation concession overseen by the MEM applicants must submit a technical-economic feasibility study that includes closure costs, as well as the necessary capital investments and expected revenue flows.

Regarding the coverage of remediation and closure expenses, it will be the responsibility of mining rights holders to establish an escrow account with annual contributions, which will be used to guarantee physical remediation during operation and compliance with closure and post-closure plans. The account will be established in a pre-approved financial institution, and the estimated closing and post-closing costs will be evaluated every 5 years as part of the environmental license review process. At least 2 years before the total closure is carried out, the full amount must be deposited. This replaces the requirements of Regulation 207-98, Law 4-00, and the environmental norms for non-metallic mining, which previously required the payment of a public bond.

It is established that every beneficiary of mining rights must also adhere to the corresponding procedures set forth in Law No. 64-00. This includes the submission of a Closure Plan as a requirement to obtain an environmental license, which must be updated every 3 years, unless the environmental authorization indicates otherwise. This law orders the creation of the National System for the Management of Public Mining Income (Sinagerem, for its spanish acronym).

Preliminary Draft Law for the National System for the Management of Public Mining Revenue (Sinagerem)

The creation of this system is mandated within the proposal to modify the Mining Law. Its primary function is to manage the net income collected by the state from mining activities efficiently and transparently, and to use a portion of it to finance sustainable development objectives of high political, economic, social, and environmental priority throughout the national territory.

In essence, this system establishes investment mechanisms that ensure the benefits accruing to the state from mining activities contribute to fulfilling the nation's sustainable development objectives. These objectives include promoting investments in regions where mining exploration and exploitation take place, as well as increasing the competitiveness of the productive apparatus and enhancing its export capacity. Additionally, the system aims to support the organization of productive clusters that capitalize on the competitive and comparative advantages of the Dominican industry. In summary, the purpose of this system is to diversify the Dominican economic apparatus by utilizing mining revenue towards sustainable development initiatives.

It outlines general criteria for evaluating projects and allocating funds, with a particular focus on investments that strengthen human capital and innovation in the country's scientific and technological infrastructure. The system also prioritizes the completion of ongoing projects and encourages the integration of different territories through joint initiatives. All initiatives and projects undertaken by the system will be audited, supervised, and required to align with the END and corresponding territorial development plans. Development Councils will be established in regions where they do not yet exist, while existing councils will adapt to the mandates of the new law. These councils will be responsible for formulating economic and social plans and projects for their respective territories in accordance with the guidelines set out in the law.

The management, investment, and operation of the State Mining Revenue (REM) will be entrusted to the Mining Trust Fund for Development (FIMIDE), an independent financial institution managed by Fiduciary Reservas S.A. (partially owned by the state). To oversee the operation of the trust, the Ministry of Energy and Mines (MEM), the Ministry of Economy, Planning, and Development (MEPyD), and the Ministry of Finance will establish the Technical Committee for the Management of the State Mining Revenue (CT-GEREM). It mandates the creation of different mining funds:

- a.* Mining Fund for Regional Development,
- b.* Mining Fund for Municipal Development,
- c.* Mining Fund for Solidarity Financing for Entrepreneurship,
- d.* Mining Fund for Applied Innovation and Competitiveness,
- e.* Mining Savings and Stabilization Fund.

The financial resources to be managed by the system will come from:

- a.* Patents for exploration licenses and exploitation concessions.
- b.* The contribution of 5% of the income generated to local governments, provided in Law No. 64-00 General of Environment and Natural Resources, and modified by the National Mining Law.
- c.* Fifty percent (50%) of the resources received by the State for: Mining Royalties and Net Smelter Return; Income Tax and its analogous taxes, the Asset Tax, and the Capital Gains Tax, as well as the Annual Minimum tax and the Net Profit Sharing tax, from any other

mechanism established to guarantee the Minimum State Participation within the Total Mining Income.

- d. In addition, 100% of the benefits generated by the trusts within the National System for the Management of Public Mining Revenue.

The concept of Minimum State Participation in Mineral Rent is established to ensure that the State receives a minimum of forty percent (40%) of the attributable profits over the entire operational life of mining projects, referred to as the Total Mineral Rent.

Figure 5-4 integrates the proposed interventions with the change model for development and planning policies. The figure depicts the causal relationships between interventions and their underlying determinants. Dotted lines are used to connect the interventions with the determinants that prompted their creation.

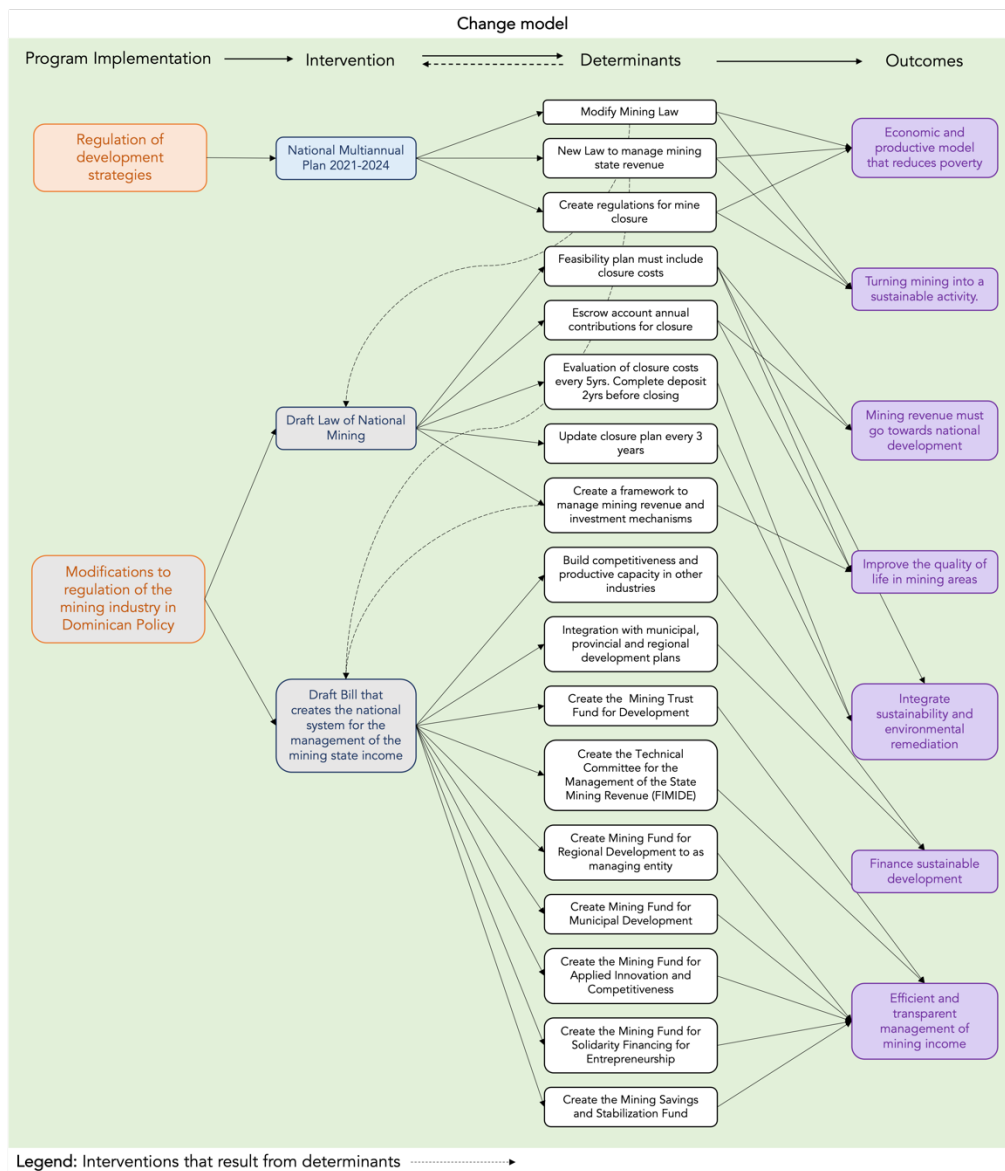


Figure 5-4: Change model of proposed policies to regulate mining industry policies in the Dominican Republic.

5.1.3 Intervention Theory: Change Model

Change Model constitutes the articulation of the causal relationships that are expected to occur to attain the program goals (Chen, 2015). The complete change model can be found on Appendix C.

The results of the analysis showcase that policies targeting mine closure are not thorough or specific, and there is closer attention being paid to environmental and physical aspects, as it is the trend in other jurisdictions (Bainton & Holcombe, 2018; Gregory, 2021; Streit et al., 2023; Syahrir et al., 2021). Thanks to the variety of legal documents consulted, changes in the writing of public policies over the years could be identified. Newer policy documents showcased more detail in their stated objectives, as well as integrating a dimension of attaining ‘sustainable development’ through the intended outcomes.

A better integration among the legal documents could also be observed, considering how some policies are determinants to achieve the goal of other policies. Such is the case of the National Development Strategy, which was conceived in the National Law and Public Investment System, and within which the necessary reforms to the legal frameworks regulating the mining industry are foreseen. It is understood that these modifications are necessary so that some of the objectives of the END can be achieved through mining, such as such as the generation of formal jobs and the strengthening of business competitiveness. However, there is still a perceived gap for the development of communities without mining to be realised, notably the lack of connection with the integration of social aspects into closure plans.

5.2 Vehicles for Inclusive Development in the Context of Dominican Mining

In this section the data derived from the conducted interviews are outlined the vehicles for inclusive development according to Gupta et al.’s (2015) framework, as well as other sub-coded inductively identified through the data analysis process. The collected insights informed to the construction of the action model, answering RQ2, as well as different perspectives that address RQ3.

5.2.1 Intervention Theory: Action Model

As part of the Intervention Theory following Chen’s non-linear model, the inputs gathered from the interviews and the review of literature have paved the construction of the action model. This model illustrated in Figure 5-5, contains the descriptive assumptions collected from key stakeholder interviews, to construct a visualization of the necessary elements that will lead to desired changes.

The results of the interview, which are disseminated following this section, showed that different actors involved have a similar grasp on how the mining industry is interconnected with other fields.

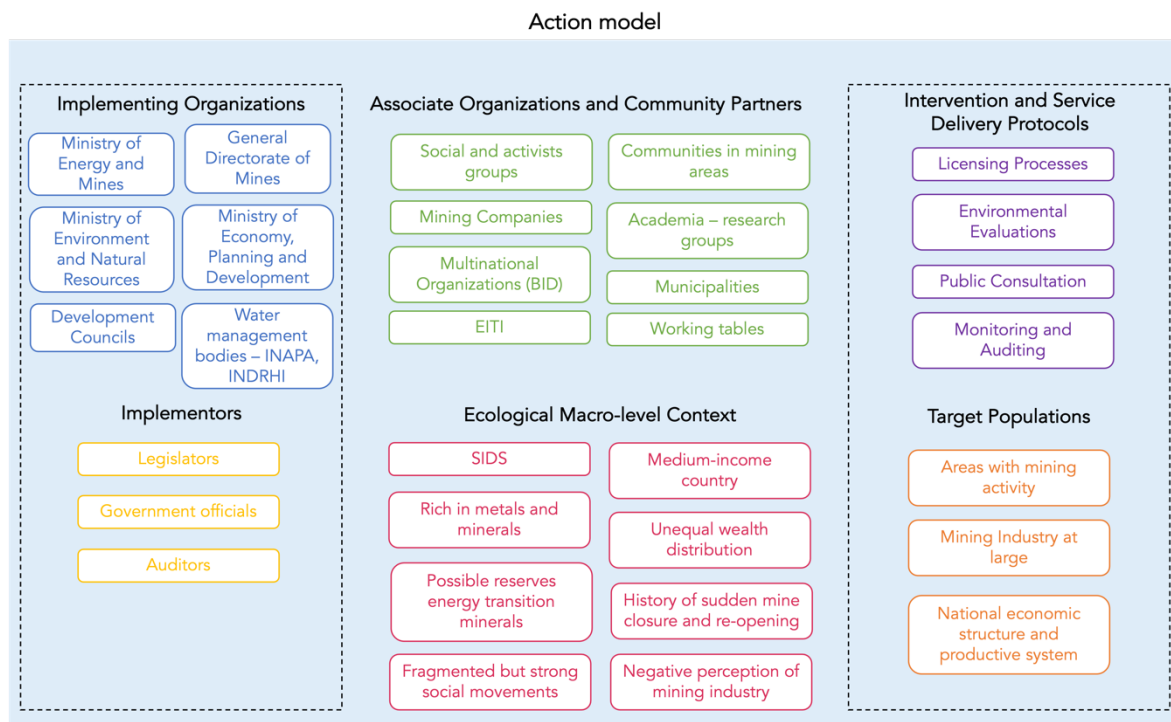


Figure 5-5: Action model of the intervention theory.

5.2.2 V-1: Developing Relevant Epistemic Communities and Communities of Practice and Social Movements

In the context of the mining industry in the Dominican Republic and the practices surrounding mine closures, the results of the interviews have revealed some ways in which different actors use the generation and sharing of knowledge as a tool to guide their actions and try to influence others.

There are active initiatives aimed at educating and training communities on mining issues both on the part of the state and of scientific and social activist groups (I-2, I-5, I-7). Government institutions engage in educational activities with communities, approaching it with the intention of having a more horizontal dialogue, covering general information such as the life cycles of the mines, including the closure periods (I-2).

An interviewee told an experience of having articulated 26 community members 70 years and older, to reconstruct the biological history of their area. A task that a person with an academic background in the natural sciences could never do alone and that is information that the people of the community handle without certain technologies or academic preparation, but this does not detract from its merit as an investigative task (I-5). It becomes an activity in which people organise themselves to collect information and turn it into data that can then be used as a tool to advocate for their own well-being. This respondent highlighted that the first step to building up epistemic communities is that they organise to become more aware and sometimes academia assists in this first stage while often communities have taken the initiative and academia provides the accompaniment, namely offering the tools to understand EIA and take part in the public consultation processes. Once communities are organised and start gathering information for their active participation, the next important thing to do is to systematise that information and turn it into data, that can be for educational purposes and engaging with other communities (I-5). Despite this, some respondents from academia have argued that social opinions do not

necessarily need to be based on scientific evidence, as is often demanded of communities. They argue that it is unfair to require such a level of academic rigor from social opinions (I-5, I-7).

According to the respondent's former directive of the Alcoa mine, transitioning the site into limestone mining with Ideal was possible because of the know-how that local engineers had. Highlighting the importance of seizing opportunities to acquire knowledge and skills from foreign companies to enhance capacity and foster epistemic communities for more meaningful participation. However, also stating that this was largely influenced by their drive to learn (I-6). A representative from the active mine Cormidom, argued that the dissemination of knowledge was an advantage for his company. What the communities have personally recorded and witnessed becomes a historical memory of the place, which can help them in case they want to develop another mining project in a different territory. The documentation, either in memory or physically, of a community having a mine, during all its stages up to closure and post-closure, becomes an event that, when documented, can be replicated, and that involves research and knowledge generation specially when the community is iteratively learning of how to engage with mining companies to their benefit (I-1).

However, while it is true that for many groups there is much value in knowledge, there is also a reality that for others, active participation in community articulations can be a luxury. As the same interviewee points out, anticipating the future importance of including social aspects in closure plans may be obvious, but it is not correct to assume that for a person who, for example, is unemployed, engaging in epistemic communities is a priority (I-1).

A former Government official and current public opinion leader sees the Extractive Industries Transparency (EITI) as a feat, guaranteeing access to information and forcing Government and Mining companies to keep information up to date since they are evaluated on it (I-3). Nonetheless, another interviewee contested that accessing documents such as EIA from years before the start of EITI in the DR, as well as financial statements and audits from mining companies is difficult (I-7). EITI deems that integration with the academic sectors has been lacking and part of its future communication campaigns include visiting universities and secondary schools to offer support in technical courses concerning ethics in the mining industry (I-8).

Characterizing the academic sector

However, some particular criticisms were directed from government figures to the academic sector, which is perceived as small and biased. Calling for objectivity, to ground positions in more scientific research and to move away from reactionism and subjectivity to achieve more effective oversight (I-3, I-9). Another respondent, formerly leading a mining company, mentioned that the role of academia is most valuable when veered towards educating and motivating communities to be more actively involved (I-6). Meanwhile members of academia commented that when they have presented at public consultation processes to advise communities about technical aspects of the dissemination of EIA, mining companies have reacted alarmed (I-5).

Another respondent characterises the academic sector to have three variants. There is a part of the sector that acts out of "*empty principlism*" mostly based on kick-starting campaigns and assuming slogans. Another group is ultra-technical, detached from the non-academic community, with almost dependent proximity to the private sector and usually belonging to private universities. On the other hand, the third variant, which is mostly dispersed but partly consolidated in the Universidad Autónoma de Santo Domingo (UASD), approaches the environmental problem of mining from a more critical position, understanding that to articulate themselves they must question the epistemological basis of their own academic work. From the

interviewee's point of view, this is because, in this context, knowledge is also a commitment and not taking on this commitment often undermines social struggles (I-5).

An interviewee that was formerly a government official points out that one of the difficulties that the academic sector has had is the difficulty of accessing funding. For a country like the DR with so much active mining and potential, understanding its conditions should be more prioritised initiatives from government institutions, as opposed to waiting for a foreign company to come in and be the first one to perform research and field assessments (I-3).

Beyond environmental education

The importance of managing knowledge not only on environmental aspects is also recognised. A respondent exemplified that when conducting courses on domestic ecology they would also integrate nuances of political ecology. When covering topics such as reading labels of cosmetic or cleaning products, they would prompt premises such as ‘Why do some products pollute?’, analysing the level of responsibility and awareness of business groups and inviting to question how the political and economic models of the country allow or even facilitate that commercial and economic activity pollute (I-5).

The insights provided by the interviewees emphasise the importance of mining industry to achieve development. For the representative from Cormidom, development in the surrounding mining area manifests through children accessing private schools, building their houses of cement, and acquiring vehicles (I-1). An official from MEM points out that “*true closure is the social closure*”, beyond physical and environmental recovery it must also consider socio-economic flourishing, so that the town can continue to thrive even after the mine has left (I-2).

The interviewees also highlighted the need to ensure that economic benefits from mining operations are distributed fairly and do not create dependency on the mine. This is particularly important since the benefits of a mine go beyond just the direct employment and financial contributions it provides. The mine's economic injections have the potential to boost economic activity in the surrounding area, increase people's purchasing power, and help other economic streams grow (I-2, I-3, I-5).

However, mining companies must also be careful not to create a sense of reliance that could hinder long-term development. Instead, they must strive to figure out how to support community projects without making them dependent on the mine, as noted by an interviewee formerly working with MEM (I-3).

The diverse perspectives shared by the interviewees highlight the importance of engaging different stakeholders in epistemic communities to develop inclusive mine closure plans that account for socio-economic aspects. This approach requires a shift away from the current economic model towards one that prioritizes equitable wealth distribution and sustainable development (I-1, I-3, I-5, I-9).

5.2.3 V-2: Transforming Governance into Interactive Governance to Enable Empowerment

Civil society is perceived to be very active nationally and to have a solid comradery with civil groups from other countries, especially through the EITI network (I-8, I-7). This engagement can be characterized under the concept of mineral governance, presented in section 3.1.

According to two respondents, namely a current officer of the Ministry of Energy and Mines and a former director of a mining company, mining companies tend to adopt a paternalistic approach towards community engagement and Corporate Social Responsibility (CSR). This

attitude significantly undermines the relationship between the companies and the communities they operate in (I-2, I-6). As a result, there is no real interaction with the communities, leaving them feeling powerless and unheard. This, in turn, creates a sense of mistrust towards the mining companies. A vital aspect for mining companies to create successful closure plans is to rebuild the relationship with communities, and they advise this cannot be achieved solely through public relations or communication strategies, rather it is imperative to redefine their social policies and *“to break away from the perverse rationality of simply seeking capital expansion”* (I-5).

Nonetheless, an experience shared by the Cormidom case study sheds other nuances. After carrying out a geographic mapping of the municipality where the mine is located, it was determined that the upper part of a nearby river basin had bare soil and was very eroded. Although it is not within the mine's concession, it was considered important because according to the respondent, their only water source is rainwater (I-1). The land to be reforested was owned by many farmers who had small plots of land each. While designing the reforestation plan, it was determined that cocoa was a prominent crop in the area, but it yielded only one or two harvests a year. After consulting experts in the field, it was decided to grow a combination of cocoa and plantain crops, which is a stellar product of the Dominican cuisine. This combination allowed the farmers to use the plantains for their consumption and to harvest both plantains and cocoa as a business. The initiative was complemented by courses in chocolate making, creating a productive activity completely detached from mining. For the Cormidom correspondent who participated in the interview, this is an all-around achievement, arguing that it improves the social image of mining, reduces social pressure, enhances the environmental health of the environment, reduces erosion, and diversifies the economy. Moreover, they are currently looking into carbon captured from the cacao fields can become a payment for ecosystem services, in his words *“it is not reforestation for the sake of reforestation, it's on steroids”* (I-1). This is a decision that had a long-term vision as the mine still has a long utility period but also it took into consideration what the decisions would mean for the incumbents of that land. The closure plan for the Cormidom mine is of great importance, as maintaining a social license is crucial for the company. Properly closing areas is a necessary part of demonstrating their commitment to developing communities.

A respondent from the academic sector affirmed that the first environmental record for the development of any project should be its social perception (I-5). The same interviewee shared accounts of solidly organised communities, such as the protests against the extension of the ferronickel mine Falcondo in the Loma Miranda area, spreading throughout the Dominican territory and the diaspora (Gómez-Valenzuela et al., 2020). In addition, a representative of the Dominican Public Policy Observatory of the UASD (ODPP-UASD) shared the experience of the Comité Grupo Renacer, which brings together the communities living in the area near the tailings dam of the Barrick gold mine. They have organized themselves to denounce the risks facing what has been named a ‘high risk wall’ and are currently making demands to be relocated. In this particular process, the social movement is demanding to avoid what happened in the community of El Yalá, for the construction of another tailings dam, Barrick had to displace 390 families, however the relocation only included 60 houses, without the provision of services such as water, a situation that in the words of the interviewee: *“is not Dantesque, because the communities have already learned to live with misfortune”* (I-7). The same mining company had to face protests when it tried to establish a new tailings dam in the town of Monte Plata, a project that for the moment is unfinished, a move that according to the respondent is not only to cover the remaining operational time of its construction but is part of a plan for future expansion (I-7). The issue of tail dams has been such a difficult one to tackle, that no tail dams have ever been closed in the Dominican Republic, the representative from Cormidom offered that achieving this is a great professional motivation. The longevity of these humid tailing dams is also a worrying fact especially due DR's conditions as an SIDS. The dams entail a long-term

environmental liability that requires technical measures for its maintenance. Researcher and opinion leader, from the Environmental Commission-UASD emphasizes that closure planning and cost estimation need to take this into account, which is now being considered in the Dominican context (I-5). On top of that, the impossibility of repurposing the areas, how it affects access to water, and environmental and health risks have historically been an egregious challenge the communities (I-7).

Governance in the Face of Environmental Fragility

Another experience of community articulation is a current process regarding the Romero project for a gold mine in the southern region of the DR. The San Juan area is incredibly important for water supply. The surrounding communities have organised themselves to understand the environmental fragilities of their territory. In this articulation, the Environmental Commission of the UASD and other groups have offered technical accompaniment in the public consultation process. At the moment, the project is on hold, waiting for the environmental licence application process to begin (I-3). The position of the mining company seeking to set up in the area is that community groups and civil society groups have opposed the EIA (I-5). In this case, several interviewees consider it as a development opportunity for the southern region of the country, which is the most underdeveloped (I-3, I-5) and consider it unfair that they are not allowed to carry out the EIA, resulting from 'fundamentalist' position of environmental groups (I-1, I-2, I-3, I-4). On the other hand, a former government official states that the central government has not properly engaged with civil society groups, lacking a reassuring system to motivate public to oversee (I-3).

However, the position of civil society groups is that it is not a question of preventing the EIA from being carried out, but that the resistance is due to the fragility of the territory under discussion (I-5). The project represents 0.04% of an area with 62 other mining concessions, and according to Dominican law, to carry out an EIA it is first necessary to determine the use of the territory, so allowing the Romero Project to carry out its study implies that the whole area can already be considered as suitable for mining, the project is above a dam and close to water systems. In this case, the communities have articulated a request that the hydrological importance of the area be recognised and that due to its environmental fragility it cannot be a mining region, as are other areas in the Cibao central region, where Cormidom, Falcondo and Barrick are located. According to the researcher and activist interviewed, a community that can organise, educate, and articulate itself, is a community that has the capacity to resist. The climate of distrust that exists among the public may stem not only from the actions of politicians but also from the lack of robust guarantees in current laws (I-5).

The potential risks to water sources in such a small country also cannot be ignored, as mentioned in the PNP where the context of being an SIDS is considered. Thus, any increase in mining activity must be approached with caution, considering the potential impact on the environment and the country's sustainable development goals. An opinion leader and former official of the MEM have argued that open pit mining should be banned in the DR due to its vulnerability as a small island (I-3). Conversely, a current high official in the same ministry has acknowledged the DR's susceptibility to climate change and highlighted the role that mining can play in enabling the country's energy transition (I-2).

Nonetheless, it is crucial that mining activity is carried out in a way that promotes our own energy transition and climate adaptation measures. As pointed out by another respondent, "*no productive activity, whatever it may be, can escape from the logic that its objective is the expansion of capital*" (I-5), what remains to be defined re-measures to guarantee that this expansion of capital generates value beyond the economic dimension.

Interactive Governance Between Civil Society and Government

Regarding the EIA, a representative from the Ministry of Environment and Natural Resources said that even though this study does not include the ‘Social’ on its title as other countries do, the social aspects have been considered. This is through public consultations and as part of review of Terms of Reference including the impact of communities, and there is even a Guide for Conducting Social Impact Assessment within the EIA (I-9). Another interviewee working with non-metal mining from the same Ministry corroborated, stating that often projects are overruled even though they are environmentally viable, because they would negatively affect communities. In some cases, even though these risks exist, communities have requested agreements to establish compensation schemes that regularly include jobs, training, and physical infrastructure such as roads. In these cases, mining companies are subject to reporting on their compliance with community agreements on the environmental compliance reports (I-4).

The UASD Environmental Commission serves as advisor to the central government, the Congress, city councils, and the Dominican Municipal League. But they also present critical positions, when the government is not transparent or does not act in the best interest of the population (I-5). In this role they have also reached out directly to the shareholders of mining companies. This Commission has a relative leadership among environmental groups in the DR (I-1, I-5, I-6) and from their position they have advocated for social entities to integrate environmental variables, instead of pushing for the creation of more environmental groups, and in this way, they have created socio-environmental networks throughout the Dominican territory.

Critiques have been raised regarding the design of the END, which are having an impact on its ability to be effectively implemented for interactive governance. The MEPyD should be non-articulating support for the Development Councils because sub-national levels of government act with a different dynamic, and according to their perception, the councils end up being assigned roles that they are not prepared to assume, a position shared by other interviewees (I-1, I-3, I-5). Another weakness pointed out by the member of the Environmental Commission is that when integrating the Development Councils, the representation of the business community is greater than that of grassroots organisations (I-5). However, an interviewee representing the Dominican Observatory of Public Policies denounces that in the case of the mining company Falcondo, it is not the provincial Development Council that participates in the Board of Directors of the mine, but a direct representative of the central government, characterising this fact as a symptom of a strong centralisation in the exercise of public policies in the country (I-7). Also noting that historically, it has been difficult to access data on how the 5% compensation payment established in Law 64-00 is handled by the Development Councils. In fact, several interviewees were not aware that these entities were in charge of this function (I-8, I-4).

Regarding interactions among different government levels, an interviewee from an operating mine stated that too often the different ministries work “*like islands*”, with very little communication between them, or with the central government, let alone with municipal governments (I-1, I-7). According to the respondent, this has been evidenced with the application of the END. The mine has taken part in multiple meetings and working tables, with intention of drafting a Municipal Development Plan but it has not been finalized. In their perception, it has not been given the appropriate follow-up by the different government institutions that take part. A respondent from the MIMARENA concedes that although relations with other ministries are fluid and collaborative, these conjunctures tend to depend heavily on changes in central government (I-9).

A view shared by several respondents is that one of the central problems that have prevented an effective integration of the different groups interacting around mineral governance is the rentier and clientelist nature of the Dominican political class (I-1, I-3). This type of system is not congruent with a vision of development and wealth redistribution as envisioned in the END.

Many times when faced with the possibility of a project - mining or other projects such as hydroelectric power plants - the communities assume instinctively an attitude of resistance, which on the one hand is positive because they often seek help from academic and environmental groups to guide them, but it is also negative because it creates a de facto resistance to mining, and reproduces the negative image that this industry has (I-5).

5.2.4 V-3: Adopting Appropriate Governance Instruments.

A former high ranking officer of the MEM stated that “[we] need authorities that are aware that water is more important than gold, but that gold is also important, as long as it is well managed”, alluding that to have adequate management of mining, authorities need to build an environment of trust, through a ‘developmentalist vision’ where prevailing political continuity and innovation prevail, but always with ‘the people’ as the centre of public policies (I-3).

As stated above, all interviewees have opinions that the regulatory framework on closure policies is not appropriate, and some possible causes were brought up. According to a directive of an operating mine, the tendency of closing and re-opening mines in DR has impacted closure policies, which do not envision a post-closure scenario for mines. However, they also concede that it is still through these kinds of junctures that the necessary conditions are established to avoid a socio-economic crisis after a mine closure, deeming it a big weakness from the performance of Development Councils (I-1).

Beyond legal requirements

This interviewee as well as a former-director of Alcoa bauxite mine that is no longer in operation, believe that the actions taken by the companies they represent in relation to closure go beyond the legal requirements (I-1, I-3). The interview from the Cornidom mine also perceives that the failure to ensure that mining extraction generates development is a risk because if the economic benefits of mining are not used to reduce inequality, it generates more inequality, which generates social conflict, destabilising economic and political systems (I-1). He supports the modification of the mining law because in order for Cornidom’s actions to be replicable, there must be guidelines and legal framework that can regulate other extractive companies, but that above all, can establish guarantees for proper actioning from mining sector. He is also cautious of lax regulations that facilitate fraudulent activity like money laundering disguised as mining exploration, an action that affects the industry and the environment (I-1).

Regarding the physical rehabilitation of the site, Alcoa's operations included concurrent reclamation. However, the species used were not appropriate for the natural conditions of the area (I-5, I-6). Currently, there are large legacy sites in the areas of Alcoa’s former concession (I-3, I-5, I-7). A former director recounts that at the time, the Dominican government requested that the deposits left behind were not rehabilitated due to the possibility of continuing mining the site, with estimated reserves of 6 million tonnes (I-6). Apart from this, at the time of Alcoa's operations there was neither Regulation 207-98 of application of the Mining Law 146-71, nor the Environmental Law No. 64-00 that set some parameters for the physical rehabilitation of mining sites.

According to the data collected, Alcoa Dominicana played a fundamental role in the urban development of the province, and even institutionally, having promoted the creation of the

Mayor's Office (I-6). However, governmental entities have no records of the actions or negotiations carried out by Alcoa corresponding to its closure and thus the current state of the area has been referred to as an environmental disaster that the government has been forced to take on (I-2, I-3, I-5).

Former Alcoa executive attest that Alcoa tried to address some of the social implications of their departure of the company. The infrastructure built by Alcoa in the provincial areas was donated to non-profit organisations and pensions for Alcoa employees were arranged and paid in United States (US) dollars, even though this was not a legal requirement. Additionally, Alcoa directives, concerned about the economic dependence of Pedernales on mining, took over the recruitment of a company to continue the exploitation of the Pedernales deposits. Ideal Basic Industry based in the US, took over and entered an agreement with the Dominican government for limestone mining. Over time, several companies have been responsible for managing the deposits and extracting various minerals (I-6). Unfortunately, many of these operations have been conducted without proper adherence to regulations, and there has been a lack of transparency regarding the volume of exports and thus of the profits generated from these exports (I-7). In the years after the exit of Alcoa, Pedernales has experienced a perceptible socio-economic decline, being one of the provinces with the lowest rates of development in the country (Mejía, 2021).

Post-Mining Trajectories: From Mining to Tourism

Representatives from Grupo Jaragua, a non-governmental organization dedicated to environmental conservation in the region, have reported that the Cabo Rojo area, which was previously under Alcoa's concession, is currently undergoing an ambitious tourism development plan. This plan includes the former mining port, which is expected to be repurposed into a cruise port (I-5). Due to the promotion of this project in 2015, the MEM decided to suspend the extraction operations that were being managed by the company Dovemco. This decision was criticised by Alcoa's former directive, who indicated that it was a hasty decision, without taking preparations for a proper closure and overlooking the importance of the mine (I-6). A former official from the MEM who took part in this decision promised that at the time it was understood that the decision was timely for the tourism development of the area, which promised greater benefits than mining. However, the slowdown in tourism plans led to the re-activation of Dovemco's operations with a short-term permit (I-3).

Tourism is not an uncommon use for former mining sites (Peck, 2005; Syahrir et al., 2021). That post-closure use represents a new productive activity, often in the form of thematic parks, cultural heritage sites and hiking trails. However, all of these would only be available if appropriate closure of the physical environment aspects has been achieved (Barbosa et al., 2019). According to Grupo Jaragua, the former mining port built by Alcoa, had adverse environmental effects on marine ecosystems in the Pedernales area. However, the expansion of the port to receive cruise ships would cause much greater impacts due to the size and weight of these vessels compared to the barges that were previously docked for mining exports. The public and private interest in the area as a tourist destination presented a positive possibility for the rescue and conservation of the different biophysical elements of the area and certainly opened an opportunity for the economic dynamization of the area which has been economically affected by the decline in mining activity (I-3, I-6).

However, the Coalition for the Defence of Protected Areas has denounced that the expansion of the port for the reception of cruise ships would cause much greater impacts due to the size and weight of those vessels. This activity would significantly increase the pressure on the coastal to the detriment of Cabo Rojo's coral reefs, affecting the environmental services of the area and the conservation of the Jaragua coastal wetlands, considered of global importance under the

Ramsar Convention (Y. M. León et al., personal communication, September 15, 2022). The coalition has also spoken out on the constant changes that have been made to the 'Pro-Pedernales' tourism development plan, without being agreed with stakeholders (Diario Libre, 2023). This type of project should follow an application process for environmental license, as described in the analysis of the Compendium of regulations and procedures for environmental authorizations.

Envisioned Policies

Regarding the 5% that is constantly referred to as compensation (I-2, I-3, I-8, I-4), the interviewee from UASD's Environmental Commission emphasizes his point of view: *"In this context, the concept of compensation implies the neutralisation of the continuous processes of degradation that in itself entails the continuous generation of poverty"* (I-5). This reflection equating environmental degradation with poverty converges with a statement from an opinion leader, statesman and former official of the MEM that: *"the greatest enemy of the environment is poverty"* (I-3). Envisioned instruments would guarantee that net benefits generated from mining are used to create alternative jobs, guaranteeing the coverage of closure costs, while the mining company assumes responsibility for the diachronic effects of its operations, in particular in relation to human health and environmental risks in the medium- and long-term post-closure (I-1, I-2, I-3, I-5, I-6, I-7, I-9). If the environmental study process is carried out properly, without overlooking inherent weaknesses of the area, it is more likely that monitoring and closure plans will respond to the intrinsic needs of the site, including socio-economic conditions (I-5).

"The vision implies an expansion of capital, which can satisfy the economic needs of the socio-system and at the same time covers the deterioration of the ecosystem induced by the [mining] activity" (I-5); however, he also points out that lobbying from mining groups has contested this vision amidst discussions on the new mining law project (I-5). He also brings up two main weaknesses of current legislation regarding closure. Firstly, since the closure plan is a document attached to the environmental management and adaptation plan, its content is very technical referring to the physical aspects of the closure without including aspects such as the social participation in the management of abandoned spaces. And secondly, there is no system of social indicators for the observation of the post-closure and reclamation of a mine.

The interviewee from the ODPP-UASD points out other faults in the existing instruments. There are no guarantees for the capture of knowledge transfer, so it remains in an extractivist model, other aspects relating to closure costs are partly addressed in the Sinagerem proposal. Namely, the public guarantee of 10% of the cost of remediation activities can be deposited through foreign banks, making their access and traceability difficult. Regarding the public consultation process, the stance is that should not be organised by the mining companies, even if the law states that MIMARENA's support is required. He emphasised that the legal instruments must be clear about the management of the cost of closure, being explicit about the estimation of the cost of closure, separating these costs from CSR spending and especially, about who will manage these funds (I-7).

Corroborating ODPP-UASD's position, an interviewee from MIMARENA calls for more integration of the mining law and the environmental law because it is very important that both institutions work together (I-7, I-9). Also offering that the considerations of the closure plan should be completely included in the mining law, in contrast to the current framework in which the closure plan is a part of the EIA which is supervised by MIMARENA instead of MEM (I-9). Moreover, accounts from UASD's Environmental Commission and ODPP-UASD, mining contracts have been drafted in a way that sometimes contradicts the law, especially in the sharing of profits, the 5% contribution to municipalities and the participation of the Dominican State as a shareholder (I-5, I-7).

Some mining companies and the Mining and Oil Chamber of the Dominican Republic, have expressed the opinion that his draft seeks to over-legislate (CAMIPERD, 2019), however, an official from the MEM comments that the authorities have drafted an appropriate instrument to handle *“the good, the bad and the ugly”*, taking into account that there are companies working on different standards and that mining companies have different capacities to adapt according to their size (I-2). However, a senior official of the MINARENA also considers That the responsibility for ensuring appropriate closures is shared between the state and company. Whereas the state as an administrative body should have the tools for planning, which at the moment do not exist. This is a very significant factor for the state as it must also be prepared and be aware that the exit of a mine also means a decrease in tax revenue and GDP (I-9). This respondent believes that the social aspects of mine closure should not be solely overseen by mining companies, because other types of industries, such as free trade zones, may close and once that happens the Dominican State should have the structures in place to avoid a socio-economic breakdown (I-9).

Non-metallic mining is governed by Law 123-71, and the provisions relating to closure activities are included in the Environmental Norms for Non-Metallic Mining Operations. Interviewed officials from the MIMARENA understand that there is also a need to modify these norms, as the mandates to cover closure costs through the payment of a public bond of 10% of the estimated total costs are not sufficient, nor does it include the opportunity to adjust, e.g., for inflation (I-4). EITI representatives pointed out that through the modification project for the mining law, metallic and non-metallic mining regulation would be integrated under the Ministry of Energy and Mining, which would enable EITI reporting and transparency to apply for non-metallic mining as well (I-8).

Although the amendment proposals have improvements such as integrating requirements for the physical remediation of the mined site, they still do not cover the social aspects related to the social transition of the communities facing the exit of the mine. Ultimately, it would be up to each mining community to determine how to address these social aspects, especially since there is a general resistance from civil society to mining activity. Demonstrating that they can guarantee not only the generation of value from mineral exports, but also create mechanisms that can replicate economic growth beyond mining. As shared by Cormidom’s representative, *“21st century companies are no longer only for generating profits, they are for generating value”* (I-1). This value is not only generated in terms of shareholder profit, but it also involves generating value in perpetuity social and environmental value, creating structures that build trust and stability, as well as ensuring that communities are part of the process because the way the company is run inspires them to do so.

6 Discussion

This chapter provides a critical discussion of the correlation between the outcomes derived from policy analysis and conducted interviews, beside the existing knowledge in the realm of mine closure policy and practice while highlighting relevant aspects within the context of the Dominican Republic. Furthermore, it provides a look back on the research design, specifically appraising the influence of research design decisions on the overall conduct of the thesis research.

6.1 Findings in the Context of Previous Knowledge

Although it was established that having a closure plan is a legal requirement, there are no specific guidelines for it in Dominican policies. Following what it's considered best practice, according to research conducted by Peck (2005, 2011) the surveyed mining companies are carrying out concurrent closure, rehabilitating areas along the mine's lifecycle. However, it would be hard to determine if this is standard practice because the case study only included two mining operations. A factor that came up for both companies and seems to be a motivator in the absence of local legal requirements, is that both companies were liable to stringent insurance schemes and compelled to abide with the laws of the foreign countries where their parent companies are from, i.e. United States in the case of Alcoa and Canada in the case of Cormidom which require more monitoring and revision of the mine closure plan.

One of the flaws pointed out in the reviewed literature is that there is no clear establishment on how accountable government and mining companies should be in assuring appropriate closure measures and division of responsibilities when it comes to closure procedures and post-closure monitoring and maintenance. The results from the interviews showed that there is a consensus that companies should cover all costs, and the government sets the structures in place to guarantee socio-economic welfare. However, it was also shown that the current legal safeguards are not strict enough and have been evaded by mining companies, and according to stakeholders from governmental institutions it is still not sufficient, ensuring only a low percentage of the closure costs.

A practice expected to be included as best practice in closure planning practices identified in the literature is creating and keeping mining records and knowledge bases about the variables factored in mine closure planning (Fernandez-Caamano & Johnson, 2005; Getty & Morrison-Saunders, 2020; ICM, 2019; Peck, 2005). In the Dominican policy, a similar requirement is introduced on the environmental guide for non-metallic mining, anticipating keeping a record of all the environmental and social conditions of the surrounding area before the start of mining activity. This information is necessary to ensure a successful closure and would facilitate the execution itself, on top of contributing to knowledge dissemination and strengthening epistemic communities. However, in the policies there is not a direct link between these records and closure plan or the EIA, apart from the fact that in practice it does not seem to be fully implemented.

Conversely, one aspect that is not mentioned at all in Dominican policies, which could actually impact on the collection of data throughout mine's lifecycle is how to handle technology transfer. Not requiring that there is proper technology transfer from foreign mining companies to local actors is a bit concerning and it could also be reflection of the perpetuation of extractivist models, which are not compatible with the concept inclusive development (Fernandez-Caamano & Johnson, 2005).

Peña and Lizardo (2018) in their historic accounts of mining industry in the DR concluded that the country has exhausted learning processes for engaging with the mining and foreign

investment industry. A next step is to apply those experiences in ensuring frameworks for mining success are shared at different levels, national and local, and with investors. There is a similarity in that the Australian mining act is from 1978, while the Dominican Mining Law is from 1971. The Australian mining act was amended in 2011 to improve the regulation and requirements of the closure plan, accompanied by a Statutory Guideline for Mine Closure Plans with most recent update in January 2023 (*Statutory Guideline for Mine Closure Plans*, 2023). Similarly, the data collected confirmed that it would be appropriate to modify and update the legal frameworks for mining in the Dominican Republic.

Interactive governance is achieved through activists, social groups, worker movements influencing policies (Gupta et al., 2015) this is particularly true regarding the influence social movements on the expansion or regression of the mining industry (Sprague, 2015). The interactions between mining companies and community movements in the DR have evolved into a predominantly anti-mining stance. Integration with communities is hard to achieve, communities have a negative perception of mining, activist groups have strong positions, and this empowers and educates the community. Procedures for integrating communities through public consultation exist, but there are various gaps on the application. Despite the fact that the regulations state that public consultations have to be in plain language, this has not been translated into reality, even to the point of using pseudoscience language according to activist accounts from the UASD environmental commission. Public consultations are more perceived as propaganda, than a public consultation. Indeed, one of the most debated issues among interviewees was the perceived role of academic and environmental groups. However, it is worth considering that academic sector sometimes has to be reactive when it comes to doing activism on concerning environmental matters. These situations are often time-sensitive and information surfaces dynamically.

Mine closure plans can be integrated with EIA because they share some synergies (Getty & Morrison-Saunders, 2020; Morrison-Saunders et al., 2016). However, in the Dominican frameworks are not detailed enough to guarantee the level of detail required of mine closure plans. The way it is worded in the environmental and mining policies, it gives the perception of being a requirement of the EIA rather than a document in itself. It is regrettable that despite the aim of integrating social dimension to the EIA through the public consultation process, there is no obligation to integrate a community's concern. This could possibly be another reason why communities are so untrusting of mining projects.

The research also analysed proposals to modify and update the public policies that regulate the mining sector in the Dominican Republic. In a way, this sort of complex structure proposed to be managed by a public Trust, emerges as means to make to the management of resources transparent. However, it is uncertain how this could be achieved, considering the implementation struggles that Development Councils have faced. In the case of working tables that are in charge of producing the provincial development plan, an instrument that would perfectly align with Gupta et al.'s (2015) second vehicle for inclusive development, 'interactive governance that enables empowerment', there has been no progress, demonstrating difficulties with implementation capacity and a lack of surveillance from the corresponding governing body, MEPyD. On another hand, the figure of trusts generates scepticism in Dominican society and there are currently no regulations for their operation. For such a proposal to work, it would be necessary to address other more fundamental capacities of the governmental apparatus, such as collaboration between different levels of government, and the capacity to track and monitor mining revenues.

A concept that did not come up in the literature review but is included in the proposal for the new mining law is the 'conceptual closure plan', which is a measure to be used during the EIA

stage, working with estimates of environmental costs and staggering closure costs. But it is not clearly defined when this plan would be required to start establishing verified data. This conflicts with the provision that closure expenditures should be guaranteed 2 years before decommissioning.

The results also showed that the perception of value generated by a mining company goes beyond the economic dimension of profit generation, integrating stakeholders and not only shareholder value. This perception, although it cannot be deemed representative of the mining industry as a whole, is in line with the literature consulted on the involvement of companies in mineral governance, under sustainable business models. (Bocken et al., 2015). Unquestionably, this type of model in which companies also generates value in social and environmental terms is what is expected from civil society groups.

The first is that the provisions of public planning and development plans have not been fully implemented. Some aspects that I was able to identify in the legal documents were not mentioned by any of the interviewees. For example, in the establishment of the SNIP, it includes the practice of ex-ante policy evaluations, the assessment of social costs, a bank of development projects, and the creation of technical norms and procedures on public investment and training and diffusion. These aspects were not acknowledged by the interviewees, and no evidence of their implementation could be found.

A possible cause of policy failures in the DR is its predominantly dispersed legal framework. Although each institution has its own approach, it remains a bit contradictory that a project can have an exploitation licence without first having an environmental authorisation. This has caused conflicts, and a certain ambiguity as to how the environmental licence should be approached. Australia's EIA process could serve as a model, where no other license can be granted until the environmental license is approved.

The way in which communities have reacted to mining projects such as Romero's demonstrates a manifestation of the exercise of their agency within mineral governance (Christmann, 2021). The social mobilisations are looking much further than the generation of economic resources for this project, taking into consideration the long-term environmental impact, in the face of a legal framework that does not provide the necessary guarantees and in which there are legal loopholes that, in their perception, can be manipulated to the detriment of the interests of the population. This can in some ways be attributed to the training strategies driven by the activist and academic sector strengthening the generation of epistemic communities (Pouw & Gupta, 2017). However, in the interviews it became clear that the 'intentions' of this opposition are perceived differently by governmental actors and civil society itself. This shows that there are gaps and difficulties in communication.

Post-closure trajectories are a particularly absent aspect in Dominican policies. There are no parameters for defining the use of mined sites after closure activities have been completed, and only for non-metallic mining is it explicitly stated that this post-closure purpose should be outlined in the closure plan, which, in a way gives communities an opportunity to influence the decision through public consultations. Careful monitoring post-closure is essential, especially when it comes to tail dams that require long-term maintenance, as well as diachronic health problems that can surge in long timeframes when it is difficult to directly link to past mining activity. Currently in Dominican policies, these long-term aspects and economic liabilities are not discussed.

While it is true that mine life cycles are long and that various conditions can change from the drafting of a plan to a post-closure or relinquishment stage, it would be important to have

guarantees for the proper use of the mine in terms of environmental and community benefits. This particular aspect has been highlighted on international standards such as ICMM good practice guide. The current situation with Cabo Rojo, in the area of Alcoa's operations is worrying because of the environmental impact that is expected from the tourist development of the area, which will eventually affect the social aspects of the area, even though tourism promises to increase the quality of life of the inhabitants of Pedernales. Although for tourism activity, there are other regulations that are relevant, there is no mechanism that can guide the transition of an area from mining activity to tourism industry, neither in the bio-physical nor in the social aspects. Today the Province of Pedernales is experiencing worrying levels of underdevelopment some have interviewees have linked back to the exit of Alcoa (I-2, I-3, I-6). The tourism industry is also known to foster inequality and poor redistribution of resources (Fawcett, 2016; Shoeb-Ur-Rahman et al., 2020) so it would be even more important that post-closure policies are integrated with development strategies to avoid a scenario where tourism development is done without close involvement of the communities in the management of natural resources (Rahman et al., 2022).

Some interviewees offered reflections on the relationship between environmental degradation and poverty generation, questioning the effectiveness of assigning a penalty payment to 'compensate' for environmental damage. The environmental degradation that is inevitable, resulting from mineral extraction, and the generation of poverty are both elements of the same reinforcing closed loop. Whereas wealth generation and economic growth can also be placed as the flip side of mining, without proper planning for the distribution of that wealth and its investment in generating alternative means of production that do not need to intervene so drastically in natural ecosystems, we have another 'system' in which mining generates poverty. Closure itself is a crucial element of a mine's life cycle that requires careful attention and planning for biophysical aspects, if integrated with consideration of social aspects, comprehensive, integrated closure planning can be an element that integrates inclusive developmental vision with economic growth.

6.2 Reflections on the research process

Inclusive development has been primarily a theoretical proposition, with only a few successful applications reported (Dekker & Pouw, 2022). For my master's thesis, I could have employed a more extensively tested framework. However, using inclusive development as a code in this study proved to be a strength as it enabled me to examine a comprehensive system around mine closure and account for various nuances that surfaced during the semi-structured interviews. While I acknowledge that this framework may appear nebulous when applied in other studies that are not as specific as mine closure, I moved away from using other frameworks, such as the governance analytic framework (Hufty, 2011), as it offered a more theoretical lens. Similarly, I avoided stakeholder mapping as it seemed excessively rigid. In contrast, the framework developed by Gupta et al. (2015) provided a balanced approach, offering both a guiding methodology and theoretical perspectives.

Not being able to analyse the relevant legal documents before conducting interviews limited the scope of inquiry, hindering the ability to ask in-depth follow-up questions and delve into the intricacies of how regulations function in practice. For instance, it prevented an exploration of interviewees' opposition to proposals like Sinagerem and an understanding of their reasons for dissent.

Initially, I intended to utilize the ICMM guide as a benchmark for best practices. However, upon analysing the data, I realized that the interviews and policy analysis provided rich insights. As a result, I decided against incorporating the ICMM guide as a formal methodology, and instead

included it as part of the literature review. Nonetheless, it served as an important guide in providing context for analysing the data.

Non-linear intervention theory models have been criticized for their ability to accurately represent complex, unpredictable, continuously changing, open, and adaptive systems (Coryn et al., 2011). Nevertheless, Chen's change model, which emphasizes adaptability, proved to be valuable in structuring and organizing various program interventions and their determinants. While the actor model may not be suitable for this type of research, it could serve as a basis for further exploration of causal links among the elements of the action model.

7 Conclusion and Recommendations

This thesis research aimed to explore the regulatory framework surrounding mine closure in the Dominican Republic, specifically emphasizing the incorporation of social aspects. The study also sought to contribute to the limited existing research on the Dominican mining industry and generate knowledge on how these regulatory frameworks can effectively promote inclusive development. By examining the regulations and practices related to mine closure, this research sheds light on the potential pathways for fostering inclusive development. Three research questions framed the investigation. RQ1 was addressed through the use of theory-driven evaluation and intervention theory as a visual tool, which served to understand how different legal documents regulate the mine closure stage in the Dominican context. RQ2 served as a guide to contextualize the interactions between different actors and how they influence the implementation of regulations and practices of mine closure. RQ3 focused on finding the particular nuances of how closure activities, albeit not considered in regulation, can lead to social and economic benefits, within the framework of inclusive development by Gupta et al.'s (2015).

The contributions of this thesis are largely empirical since, to the best of my knowledge, there is no research on mine closures in the Dominican context. Subsequently I detail the main insights drawn from data analysis to each research question:

RQ 1: How is current and proposed regulation in the Dominican Republic considering socio-economic aspects of mine closure?

Given the lack of public policies focused solely on regulating mine closure, relevant legal documents for the mining industry, environmental management, and development planning were analysed. The review of these documents revealed that mine closure is not fully regulated in Dominican policy. Although recent documents mention the need for planning for closure more explicitly, regulation focus more on biophysical aspects than social ones. With the exception of biophysical aspects that also have a social impact, such as considering the future use of the mining area. Regarding proposals for the creation of a national system for managing state mining revenue, it is stipulated that a portion of the funds would be allocated to revitalize the Dominican production structure and even to ensure financing for tasks related to mine site rehabilitation.

In public policies targeting public spending planning and development strategies, mining is considered important for the economic growth of the Dominican Republic, and there is a recognition of the need to implement strategies to guarantee the redistribution of these resources and their use in economic diversification, as well as the need to strengthen the legal frameworks to ensure mining activities with the least possible environmental and social impact. In fact, the need to create regulations for mine closure is foreseen. However, not all interviewees are aware of the provisions that do exist, such as the role of development councils in administering 5% of mining benefits that should be contributed directly to the municipalities where mining takes place. On the other hand, weaknesses were identified in their implementation and lack of tools for monitoring.

While it is true that the consulted literature and the collected testimonies agree that social aspects have fewer legal requirements, the interviewees unanimously consider them of great importance and meriting more regulation.

RQ 2: What are the interactions and responsibility distribution among stakeholders around mine closure in the Dominican Republic?

As highlighted in this research, mine closure has social, environmental, physical, and financial dimensions. The mine closure process does not depend solely on the mining company or the state but requires coordination and intervention from multiple government actors from different institutions and sub-national levels.

In general, the relationship between different institutions, such as the Ministry of Energy and Mines, the Mining Directorate, and the Ministry of Environment and Natural Resources, are strongly integrated, as both exercise a supervisory role for the mining industry. However, with other institutions such as the Ministry of Economy, Planning, and Development, although there is a relationship open to collaboration, this is not reflected in implementation since a sectoral plan for the mining industry has not been created, and the function of Development Councils has not been consistent or completely successful. Regarding the different levels of government, the role of municipalities as representatives of the central government is crucial, and they should work hand in hand with Development Councils, but this seems to depend on who holds the municipal office.

Regarding the distribution of responsibilities, there is a consensus that the mining company is fully responsible for covering rehabilitation and closure costs. However, interviewees also agree that the provisions established in legal documents are not sufficient to cover closure costs in case of abandonment or sudden closure. Although legal documents do not contemplate relevant socioeconomic aspects, interviewees understand that it is necessary for the state to create structures to guarantee the economic stability of communities facing the end of a mining project.

RQ 3: What practices during a mine's lifecycle could best lead to outcomes of inclusive development once mining activities cease?

Numerous initiatives have emerged from both the mining sector and civil society actors, collectively working towards creating favourable conditions for promoting inclusive development. Notably, the academic sector, known for its strong social and environmental activism, recognizes the significance of educating communities not only about environmental concerns but also about the political processes that govern resource extraction and industrial activities in general, despite their environmental impact. This education aims to empower communities, enabling them to understand their role as advocates for their own interests and sovereignty.

On the other hand, it was highlighted that the mining companies interviewed have operational practices that go beyond what is required by law in terms of concurrent environmental remediation before it became mandatory. Although motivated by external factors, such as requirements established by insurers, they have been careful to involve communities in the decisions they make and, in some cases, such as reforestation with cocoa and plantain polycultures, they have managed to articulate productive models independent of mining while simultaneously rehabilitating the environment. However, it was clear from examples of other companies that emerged through the interviews that not all mining companies follow the same standards or have healthy relationships with the community. Another notable factor was the lack of parameters for the transition of mined sites to their new uses, such as the case of Cabo Rojo, which was part of a mining concession and where large-scale tourist operations are planned that threaten fragile marine ecosystems in the area.

It was determined that current policies are not comprehensive enough to ensure positive mining legacies or social closure. Forecasts indicate that, despite strategic movements such as the circular economy, the transition to low-carbon technologies will require more resources from existing mining deposits. However, it was also determined that for a large part of the interested sectors, mining offers development opportunities, as long as the necessary mechanisms exist to guarantee it. The opposite scenario, in which there is no planning for the redistribution and reinvestment of resources in a way that promotes inclusive development, is a situation in which the mining industry can have negative repercussions that diminish the quality of life of vulnerable groups.

7.1 Practical Implications and Policy Recommendations

This study has identified several practical implications and policy recommendations for mine closure planning and development in the Dominican Republic.

Firstly, it is essential to practice ex-ante evaluation as envisioned in the Law of Public Planning to avoid introducing unnecessarily complex policies and ensure that the appropriate resources and capacities are in place to apply new policies, such as Sinageram. Secondly, there should be a policy instrument that is especially focused on establishing the requirements and specific parameters to guide mine closure planning, as well as monitoring structures that can be integrated with current structures. These mine closure policies should be integrated with the policies for planning and development since there are already considerations of mining as a means to generate development.

Thirdly, it is recommended that guidelines for public investments be developed and followed, with a focus on connecting mineral rent collection with reinvestment in development projects. This would help to promote economic growth and inclusive development in the country. Clear limits to the use of former mining sites should also be included, with a focus on complete biophysical remediation and ensuring that post-closure uses benefit communities. The local community should be involved in taking these decisions as well as implementation and revision processes. There should be clear limits regarding the environmental impact new activities may have and how that would affect the quality of life of surrounding communities. This should include provisions for abandoned sites, post-closure monitoring of tailing dams, and the management of potential health problems that may arise after a mine is closed.

Furthermore, policy frameworks should include guidelines to approach technology transfer in a way that supports the improvement of Dominican productive structures. The integration of the licensing process, where operation and environmental licenses are not so far removed, is also necessary. It is recommended to improve the integration of mining licenses and environmental licenses, prioritising ensuring that projects that are licensed for extraction are environmentally viable.

Finally, the need for indicators to measure inclusive development cannot be overstated. This would help to measure the extent to which social and political structures challenge inequality and promote inclusive development. Therefore, it is recommended that such indicators be developed and implemented to promote transparency and accountability in the mining industry.

Overall, it should be noted that the current mining policies do not guarantee economic diversification or the redistribution of resources. Where it comes up is as an intended objective in policies for public investments, promoting making a connection between the collected mineral rent and its use for reinvestment in development projects. There are, however, no specific mechanisms to guarantee this.

The practical implications and policy recommendations identified in this study should guide policymakers in the formulation of effective and efficient mine closure policies that promote inclusive development, including its dimensions of social and environmental justice.

7.2 Recommendations for Future Research

Based on this thesis research, some interesting paths have emerged for conducting future research.

The financing of mine closure costs and the creation of Sinagerem represent a structured mechanism that seeks to coordinate various functions and elements to ensure the appropriate use of resources. However, the ability of Development Councils to manage these resources has been limited, and further examination is required to identify the reasons for this shortcoming, beyond political corruption. A detailed ex-ante analysis of the proposed modifications to the mining law and the Sinagerem framework would provide valuable insights.

It seems worthwhile to continue the research about the integration of EIA and mine closure planning. Further research could explore how to make better use of the EIA without sacrificing the level of detail required in the closure plan.

While the study primarily focused on large-scale mining, the regulation of artisanal and small-scale mining also requires greater attention to ensure human and environmental safety and understand its potential as a development-generating. This topic could also be explored through the lenses of community-based managements. Additionally, exploring the potential for co-management of tourism and mining activities could enhance the economic development of certain regions.

Future research could explore the potential impact of prolonging the lifecycle of mines activities and how these impacts achieving biophysical closure. Furthermore, investigating the alignment between mining and development and how changes in mine closure and reopening affect eventual final closure would be beneficial to the overall field of mine closure studies.

As previously emphasised it would be very important to maintain records of closure activities, and eventual research on how communities have transitioned would be interesting.

Conducting a policy analysis on mine closure and development policies was a crucial gap in the literature. However, a more detailed analysis of the interaction between more mines in the Dominican Republic and closure planning would provide further insights into the effectiveness of these policies.

Further research should also focus on how to realistically integrate long-term commitments for mining companies into legal frameworks. For example, monitoring for health issues that can arise years after closure or the maintenance needs of tailing dams.

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Appendices

Appendix A: Interview guide (translated to English)

Appendix B: Consent form (translated to English)

Appendix C: Complete change model

Appendix A: Interview guide (translated to English)

Some notes about the interview protocol:

- The interviews were conducted in Spanish, this is a translated version of the actual interview guide used.
- The questions have been formulated considering that interviewees likely have limited time availability and aiming to be able to address in at least 35 minutes.
- Some adjustments were made to the interview guides depending on the background and expertise of the interviewee.
- In brackets I relate the interview questions to the research questions to and the vehicles for inclusive development from the framework by Gupta et al. (2015).

Interview Guide – Exploring roads for inclusive development through comprehensive mine closure in the Dominican Republic

Date:

Interviewee:

Organisation:

Type of actor:

Contact:

Research Questions

RQ 1: How is regulation in the Dominican Republic considering socio-economic aspects of mine closure?

RQ 2: What are the interactions and responsibility distribution among stakeholders around mine closure in the Dominican Republic?

RQ 3: What strategies during a mine's lifecycle and including prior to mine closure could best lead to outcomes of inclusive development once mining activities cease?

Greetings and introduction

- Say hello and thank them for their time.
 - Re-introduce the nature of the research and purpose of the interview.
 - Ask if they have any questions.
 - Present the informed consent form and receive approval for recording.
 - Start recording.
1. To provide context, I would like to start with a somewhat broad question: What does a successful mine closure mean to you?
Verify if mentions: If you mentioned the socioeconomic aspects of communities and challenges.
 2. What challenges have you faced in relation to mining closure planning?
 3. How do policies and regulatory mechanisms for mine closure in RD (Dominican Republic) include socioeconomic aspects? [RQ1, V-3]
Verify if mentions: Social justice or environmental justice.

4. What aspects could improve our legal frameworks regarding the closure plan?
[Research Question 3]
Verify if mentions: sudden closure.
5. How would you characterize the governance around the mining industry? [V-2]
6. How should responsibilities be distributed for the implementation of closure plans between the government and the industry? [RQ2]
7. How is the interaction between different levels of government? [V-2, V-3]
8. And between different institutions (such as MEM, MIMARENA, MEPyD)? [V-2]
Verify if mentions: communities, unions, and levels of government were mentioned.
9. How can post-mining communities' development and progress be ensured through closure planning? [Research Question 3]
Verify if mentions: Inequality.
10. How does the mining industry fit into the National Development Strategy?
Verify if mentions: Costs.
11. What activities related to mine closure begin before the closure itself, during the closure, and after the closure? [RQ3]
12. How should civil society groups articulate themselves to influence mine closure planning? [V-1, V- 2]
13. What role can academic and research groups play? [V-1]

Appendix B: Consent form (translated to English)

INFORMED CONSENT FORM

The purpose of this form is to ensure that you have received information about the thesis project and to give you the opportunity to confirm that you are willing to participate in it.

This research seeks to understand how to enhance and promote the sustainability of mining benefits. For this, the focus is mine closure activities, analysing the inclusion of social aspects in this planning.

Your participation is voluntary and as an interviewee, you are not required to answer all the questions you are asked, and you can request that certain materials be kept confidential. In any phase of the research, you have the right as a participant to obtain access to your own data, request its rectification, deletion or limit its treatment, as well as file a complaint about the use made of your personal data if you deem it appropriate. The collected information will be stored and handled in accordance with the European Union General Data Protection Regulation and Lund University guidelines.

Please mark with an (X) the statements with which you agree:

I have familiarized myself with the thesis project, I have had the opportunity to ask questions and I have received satisfactory answers to my questions.	
As a research participant, I am aware of my right to withdraw my participation (before April 30, 2022) at any time without having to specify a reason.	
I give my consent for the interview to be audio-recorded, which will be deleted once transcribed.	
I consent to a transcript of my interview being kept for future reference.	
I give my consent for the content of my interview to be transcribed, analysed and published as part of the research results for the thesis project.	
I consent to be identified anonymously, only by a job description and the organization I represent or am associated with.	

Please sign below to give your consent:

Name:

Signature:

Date:

For any doubt or question you can contact the researcher:

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Appendix C: Complete change model of the intervention theory

