

How Can Mining Contribute to Sustainable Development in Colombia?

A Review of Stakeholders Perspective and Policy Gaps

Edwin Antonio Malagón Orjuela

Master Thesis Series in Environmental Studies and Sustainability Science,
No 2012:007

A thesis submitted in partial fulfillment of the requirements of Lund University
International Master's Programme in Environmental Studies and Sustainability Science
(30hp/credits)



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Submitted May 15, 2012

Supervisor: Philip Peck, IIIIEE, Lund University

Abstract

With increased demand and high prices for minerals and metals in recent years, many resource rich developing countries see mining sector as vital to develop their economies. Colombia is one of these nations. Non-renewable natural resource wealth is seen as an opportunity to obtain economic benefits that can be transformed into increased wellbeing for citizens. However, mining often involves a high environmental impact and the risk of causing, or exacerbating social problems and conflicts in mining areas is significant. This study addresses the issue of 'How then can mining contribute to sustainable development?' in the Colombian context. This issue is critical – with 44% of the population in poverty, and the territory considered one of the most biodiverse in the world. Views obtained from interviews with representatives of stakeholder groups from government, industry and civil society and the content of national mining policy documents were compared with a selection of industry best practice guidelines in order to identify key issues for mining and sustainable development in the country. Best practice guidelines were principally drawn from the Intergovernmental Forum on Mining, Mineral, Metals and Sustainable Development policy framework and the Extractive Industries Value Chain approach. Eleven key issues were identified as important for informants: policy frameworks, institutional capacity, access to information, royalty and tax regimes, transparency, local socioeconomic development, stakeholder participation and responsibility, community trust and image, environmental performance, mine closure and illegal mining. The findings also suggest three principal gaps that need to be addressed with some priority. The focus of mining policies should be shifted from a principal focus on increased production towards sustainable development and poverty reduction objectives; better coordination between mining, environmental and national development policies and institutions towards sustainable development objectives is required; and improved technical and institutional capacity to provide an adequate assessment process and the information regarding whether the benefits from mining overcome its negative impacts and national and local levels is needed.

ACKNOWLEDGEMENTS

I would like to thank to my family, my parents Aura and Marcos, and my sister Aura, who have believed in my dreams and supported them all the time, and to Silvia for sharing this journey with me from the distance but closer than nobody. I would like to express my gratitude to all my Lumes friends, in special to the *Latinos* Andrea, Flavia, Julia, Alejandro and Jorge who have made of this experience one of the best in my life and have become my family in this land. I would like to thanks to my thesis Supervisor Philip Peck for his professional guidance and feedback during this final process. I would like to thank to the interviewees and the people that help me with this project in Colombia that showed me their interest and supported me with their time.

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Abbreviations

ANM	Agencia Nacional de Minería (National Agency of Mining)
CAR	Corporación Autónoma Regional (Autonomous Regional Corporation)
CGR	Contraloría General de la República
CSD	United Nations Commission on Sustainable Development
DANE	Departamento Administrativo Nacional de Estadística (National Administrative Department of Statistic)
DNP	Departamento Nacional de Planeación (National Department of Planning)
EITI	Extractive Industries Transparency Initiative
EIVC	Extractive Industries Value Chain
ELAW	Environmental Law Alliance Worldwide
GDP	Gross Domestic Product
HDI	Human Development Index
ICMM	International Council on Minerals and Metals
IGF	Intergovernmental Forum on Mining, Minerals, Metal and Sustainable Development
INSPQ	Institut national de santé publique du Québec
MMSD	Mining, Minerals and Sustainable Development Project
NGO	Non-governmental Organization
RMDI	Responsible Mineral Development Initiative
SEGOM	Sustainable Energy, Oil, Gas and Mining Unit
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UPME	Unidad de Planeación Minero Energética
WEF	World Economic Forum
WWF	World Wild Foundation

1. INTRODUCTION

The extraction of minerals and metals has been part of our lives since the beginning of the mankind. Indeed, the Stone Age and the different metal Ages described the process of human activities and social evolution using terms based on the products of mineral extraction activities (Sass 1998). Over the last decade mining industry has received a lot of attention again due to the boom in mined commodity demand and very high prices for most metals and many minerals (World Bank 2011), and it is expected that the trend continue for the next years due to the accelerated growth of some developing economies (CSD 2011, World Bank 2011). Countries like Australia or Canada have taken advantage of mining industry to strengthen their economies and have successfully transformed the natural resources wealth into human wellbeing over a period of many decades, however, some consider that it was not due to the possession of the natural resources, but rather due to the presence of appropriate legal, democratic and financial institutions that this has been achieved (Slack 2010). While countries such as these may have succeeded, in other resource rich countries extractive industries have had negative impact and have not helped to reduce poverty (Extractive Industries 2003). Stiglitz (2006, p138) points out "*The first challenge facing any resource-rich country is to ensure that the public gets as much of the value of the resources that lie beneath its land as possible*" Nowadays, that challenge is mainly faced by developing countries, where many have close to 30% of their income come from natural resources. For most developed countries this figure generally represents only an average 2% (World Bank 2011). As such, while mining could be an opportunity to overcome problems like poverty and inequality or on the contrary it could also constitute a 'resource curse' bringing negative impacts on growth and development of resource rich countries (Sachs and Warner 2001), with substantial negative environmental and social impacts (Liebenthal et al. 2005). Those impacts include air and water pollution, loss of biodiversity and ecosystem services, deforestation and contributes to climate change (CSD 2011); and also human displacement and resettlement; migration; lost access to clean water, impacts on livelihoods; impacts on public health, impacts to cultural and aesthetic resources (ELAW 2010), among others. In addition, when mining take place in countries with ongoing or frozen conflicts, such problems can be exacerbated and the potential for the conflict itself to be fueled exists (CSD 2011).

The importance of mining sector for development was recognized during the World Summit on Sustainable Development in Johannesburg 2002. It included in its plan of implementation a specific

paragraph about mining focusing in addressing the negative impacts and benefits, enhancing the participation of the different stakeholders and supporting best practices (United Nations 2002). To follow up the plan the United Nations Commission on Sustainable Development has addressed mining as one of its thematic topics during the in 2010 and 2011 sessions, with the participation of different governmental and nongovernmental actors. Organizations like the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development have been actively involved in the discussion and have presented policy recommendations and best practice fostering good governance and recognizing as one of the main objectives the contribution to poverty alleviation (World Bank 2011, IGF 2010b).

The United Nations Secretary General's High-Level Panel on Global Sustainability (2012, p11) considers that *"The problem is that, 25 years later, sustainable development remains a generally agreed concept, rather than a day-to-day, on-the-ground, practical reality"*, thus, to know how sustainable development principles are part of the national strategies in a key sector like mining is important. In this way this study seeks results that improve the understanding about how mining sector can contribute to sustainable development in a developing country like Colombia, where mining could be an opportunity to reduce poverty, where around 44% of the population are in that condition (DANE and DNP 2012). For Colombia it also represents a threat in one of the most biodiverse countries in the world due to its environmental impact. Nowadays, the government considers this industry as one of the main drivers for the economy (DNP 2011). The results in terms of exports, direct foreign investment during the last decade show the importance it has received in national economy (see section 4.3). However, the negative social and environmental antecedents so far have sparked off controversy in many groups of the civil society, like communities, academia, media among others. Such actors question its contribution to the country's development. Recently, there have been some changes in the institutions to support the increase in mining title requests and to improve the monitoring and control of the concessions regarding technical and environmental conditions.

1.1 Research Aim

The aim of this project is to contribute to improve the understanding of how mining sector can contribute to sustainable development in Colombia and in its mining regions. It seeks insights into the perspectives and views of members of the different stakeholders to establish the main topics mining

sector should focus on in the way towards sustainable development. This a context of high level of poverty and inequity throughout the country and with most of the mining regions historically with lower levels of development than the rest of the country and suffering directly the environmental degradation.

1.2 Research Questions

In order to improve the understanding about mining and sustainable development the following query has been applied as the main question to guide the research process:

- How can mining contribute to the sustainable development of the Colombia and its mining regions?

Sub questions pursued to help provide detail for the research are:

- What are the key issues to focus on to allow mining to contribute to sustainable development?
- What are the main areas of concern within Colombia's mining policies?

1.3 Thesis Outline

This document is organized in six chapters. The second chapter presents the methodology and the research methods used to collect and to analyze data. Semi structured interviews were conducted to some members of the different groups of stakeholders, government, industry and civil society and a number of documents were analyzed. The third chapter presents the theoretical background based on the literature about the concept of sustainable development, the relation sustainable development and mining and those specific initiatives from different organization that have approach this issue like the Intergovernmental Forum on Mining, Minerals and Metals and Sustainable Development and the Extractive Industry Value chain from the World Bank. Chapter four contains an overview of the Colombian context, presenting the most important resources exploited there, the economic importance as well as the environmental profile of the country and the tensions around mining including some social aspects. In the fifth chapter, the results of the analysis of the participants' views and documents are presented and discussed based on the perspectives obtained from the literature. The last chapter presents the conclusions and the recommendations for the three groups of actors.

2. RESEARCH METHODS

2.1 Qualitative Research Methods

This study uses qualitative research methods and utilizes different sources of data seeking to achieve a validation form known as triangulation (Bryman 2008). The data includes semi-structured interviews to different members of the actors of the mining sector, official documents related with mining policies, talks and presentations of attended mining conferences, academic work addressing the performance of the mining sector, guidelines and analysis of multilaterals such as the World Bank, and a deal of mining industry-produced literature that addresses environmental, social or (and) policy related issues.

2.2 Data Collection

2.2.1 Semi-Structured Interviews

Semi-structured interviews provide the interviewers insight into how the interviewees see the social world and how they understand the different issues (Bryman 2008). In this study the aim of the interviews was to understand better how the actors perceive the relation between sustainable development and the mining sector and the factors that they consider important to take into account in order that mining sector contributes to sustainable development. Purposive sampling was used to choose the responders that could contribute to answer the research question of this study (Bryman 2008). To guide the selection, some literature was previously reviewed; Table 2.1 shows the classification of groups and subgroups of stakeholders made by the MMSD (2002b) project in Latin America.

Responders were identified according to their responsibilities in the government, mining companies or civil society organizations which could represent the different groups of actors (INSPQ 2009); some of them were contacted during seminars or conferences of the mining sector.

GROUP	SUB -GROUP
Government	National Government - Mining Authorities National Government - Environmental Authorities Local Government - Mining Authorities Local Government - Environmental Authorities Others Authorities
Industry	Multinational Companies National Companies Miners Association Small Miners Organizations
Civil Society	Mining Trade Unions Indigenous Communities organizations Local Communities NGOs Consultants and Academics

Table 2.1 Groups and Sub-groups of Stakeholders Source: MMSD(2002b)

For this study two informants were selected to represent each group of actors identified as Table 2.2 presents:

GROUP OF STAKEHOLDERS	IDENTIFICATION	PROFILE DESCRIPTION
GOVERNMENT	Government – Mining	Officer of the Mining and Energy Planning Unit (UPME)
	Government–Environment	Officer the environmental sector office of the Contraloría (Contraloría Delegada Sector Medio Ambiente)
INDUSTRY	Industry – Association	Director of a miners association that represents national and foreign companies.
	Industry – Foreign Company	Responsible of environmental and social issues of a foreign coal company that operates in Colombia.
CIVIL SOCIETY	Civil Society - Consultant	Independent mining and environmental consultant and researcher.
	Civil Society - NGO	Local manager of Non-Governmental Organization on Sustainable Development in Latin America.

Table 2.2 Identification and profile of the key informants

The interviews were conducted between the 16 February and 5 March 2012 and they lasted between 30 and 70 minutes. Before the interviews all participants were informed about the purpose of the study and written consent was obtained to record and to transcript the interviews. (See format in Appendix 1a, in Spanish). According to Bryman (2008) semi-structured interviews make possible to have some questions or issues to guide the interview and to orient it to answer the research questions, therefore an interview

guide was designed, previous studies were consulted in order to have similar topics and to facilitate the analysis and result comparison. The interview guide is presented in the appendix 1b, the interviews varied slightly according to the participants and in the nature of the follow up for answers, in general the same topics and questions were developed. The interviews were transcribed verbatim and sent to the participants in order to have their validation (Bryman 2008).

2.2.2 Documents and other Sources of Data

In order to increase the validity of the study, others sources were also examined and taken into account. One good source of information is held to be the State (Bryman 2008). Here, a comprehensive suite of official documents were analyzed, with focus on those directly related with mining sector in order to see the main focus of the mining policies and strategies. These documents included the National Development Plan, and specific mining sector documents like the National Development Mining Plan, Ministry of Mining and Energy Policies and some regulation documents. In addition, some presentations and speech notes were collected during events such as the 4Th Mining Convention 2012, February 8-9 2012 Bogota, and the launch of the report Extractive Industry in Colombia, February 9, Bogota, were taking into account.

2.3 Qualitative Data Analysis

To analyze the data collected for the study, content analysis was carried out. This approach is most usually used for documents but also applies for transcriptions of semi structured interviews (Bryman 2008). Analyzing data required the analyst to identify themes and subthemes and codify information (Ryan and Bernard 2003, Bryman 2008). Ryan and Bernard (2003) point out those themes come from the data and also from prior theoretical understanding of the investigator and propose some techniques to identify themes. Following this approach, the interviews transcriptions were read through and some themes were identified based upon repetition, missing data and theory related material techniques. Then a matrix with the themes and subthemes was constructed as Bryman (2008) suggests to support a thematic analysis and to facilitate the managing of the information. A first version of the matrix

contained verbatim transcriptions from the interviews then a summary matrix was constructed with the main ideas of every respondent by topic, that matrix is presented in the appendix 2a. The documents were also analyzed using qualitative content analysis looking for specific themes according to the stakeholders views regarding the policy framework and other important elements highlighted by the literature like the policy objectives, a matrix with the analysis is presented in the appendix 2b.

2.4 Research Limitations

Despite informants from all groups of actors being interviewed it is not possible to generalize the results with great confidence. Not least due to the limited informant sample. Further, there is the possibility that some topics have not been taken into account, again due to the number of interviews but also due to the choice to exclude the perspectives of other actors subgroups like small-scale miners, mining trade unions or member of the community as well as local and regional authorities perspective. This limitation being placed primarily by the limited resources (time, funding and personnel) available to this thesis project. For the same reason, the study does not include a detail assessment of the policies. Regarding the choice of views upon sustainable development that have been applied to the context of mining – and thus chosen for use in this work, the use of the sustainable development frameworks from the IGF, ICMM or World Bank to analyze the data may have bias that has not been accounted for due to the lack of critical literature about them.

3. THEORETICAL FRAMEWORK

This section presents the theoretical framework about sustainable development and mining. In the first part the general concept of sustainable development is presented focusing in the main concerns that the literature has identified. The second part contains some interpretations of sustainable development for the mining sector, including its positive and negative impacts and presenting different initiatives around mining and sustainable development.

3.1 Sustainable Development

The most common definition of sustainable development is *“development that meets the needs of the present without compromising the ability of future generations to meet their own needs”*, from the Our Common Future Report of the World Commission on Environment and Development (1987). However, its meaning is still debatable and there are many other definitions (Barrow 2006). Zeijl-Rozema et al. (2008) presents two general perspectives ecological sustainability perspective that gives priority to the environment, and well-being perspective focus on quality of human life. Environmental economists divide sustainable development in strong and weak, the former considers that natural capital should be maintained or improve while latter considers that it is possible to substitute that capital for other forms of capital (Barrow 2006). It is clear that despite the ambiguity of the concept it suggests a link between environment and development (Kemp and Martens 2007), taking into account the three dimensions, economy, environment and society and that it implies intergeneration equity. However, as Kates et al. (2005) presents that lot of attention is paid to the short term in the indicators of different initiatives, so to meet the basic needs of the current generations is very important. Robinson (2004) argues that concept implies the integration of the environmental degradation with human development and poverty taking into account the reinforcing effect between them. Then poverty appears as one of the priorities in the transition to sustainable development in a way that it is not possible to achieve it if the problem of poverty alleviation is not tackled (Kempt and Martens 2007). Then, despite of the different interpretations and the ambiguity of the definition two fundamentals are clear: maintaining the integrity of the biophysical systems and reducing poverty as Kempt and Martens (2007) state. In that direction the Johannesburg declaration states *“We recognize that poverty eradication, changing consumption and production patterns and protecting and managing the natural resource base for economic and social development are overarching objectives of and essential requirements for sustainable development”* (United Nations 2002).

3.1.1 Environmental Degradation and Poverty Relationship

The World Commission on Environment and Development (1987) stated that poverty is the major cause of environmental degradation, some literature supports that idea (Duraiappah 1998). However, some studies also suggest that that relationship is more complex and other factors affect it generating some plus feedback loops (Duraiappah 1998). Duraiappah(1998) concludes that at least poverty is not the major cause of environmental degradation and points out that the powerfully and wealthy groups degrade more the environment, effect that could be worse in the presence of institutional and market failures. That degradation affects the poor, so he suggests that environmental degradation enhances poverty. His results also present the existence of a feedback effect where the poor generate effectively environmental degradation, because they don't have other choices in the majority of the cases and their condition of poverty have been generated by the powerful and wealthy groups actions. Ekbom and Bojö (1999) in their study conclude that poor people are victims of the environmental degradation, they point out that those people depend more on natural resources, like biological resources, so biodiversity conservation policies could help to reduce poverty but it requires to know more about the resources that poor people depend on in their local areas. As Duraiappah(1998) and Ekbom and Bojö (1999) also consider that other elements can help to reinforce or reduce the relation poverty-environmental degradation like policy and market failures, however, they argue that to combine poverty alleviation and environmental degradation measures could be a "win to win" strategies.

3.2 Mining and Sustainable Development

The Plan of implementation of the 2002 World Summit on Sustainable Development in Johannesburg in the paragraph 46 recognized the importance of mining to the socio-economic development of many countries and established the next priority areas, *"to address the environmental, economic, health and social impacts and benefits of mining throughout their life cycle, including workers' health and safety"; "Enhance the participation of stakeholders, including local and indigenous communities and women"; "Foster sustainable mining practices through the provision of financial, technical and capacity-building support to developing countries and countries with economies in transition"* Based on that paragraph, mining has been one of the five topics discussed by the CSD during the sessions CSD-18 and CSD-19 with the participation of different stakeholders.

3.2.1 Sustainable Mining or Mining for Sustainable Development

Mining is a very controversial industry due to its environmental impact and potential positive and negative effects on the society and the economy. The possibility to have sustainable mining when it is about the extraction of a non-renewable resource contradicts by itself the idea of long term sustainability (Hilson and Basu 2003). Resources like oil or coal require a long geological time to form, they are considered a fixed stock which decrease with the use, then the resource consumed today is not available any more for future generations as Tilton (1996) explains in the fixed stock paradigm. On the other hand, he also presents the opportunity cost paradigm, where the fixed stock is not important, it focus more in the cost of the exploitation of the resources, then if it is more difficult and expensive to exploit the deposits the demand would decrease. However, mining not only diminishes the non-renewable resources itself but also affects the renewable resources and produce and environmental damage. Then, to concentrate the discussion in the sustainability of the stock of non-renewable resources doesn't address other important issues like community relations, environmental management, stakeholders participation and ecological conservation (Hilson and Basu 2003). According to Hilson and Basu (2003) few authors have integrated in their analysis industrial, environmental and socioeconomic issues in order to put in practice sustainable development in a mine. Some use sustainable development as a synonymous of environmental protection highlighting the improvement in environmental practices and paying little attention to socioeconomic issues (O'Faircheallaigh 2010).

On the other hand, others consider that the wealth of non-renewable resources through the adequate governance conditions could improve the welfare of current and future generations transforming the natural capital into other forms of capital, like human and social, so it can contribute to sustainable development of human societies, communities, and environments (Extractive Industries Review 2003, Wayne et al. 2010), but it also require to know carefully the full cost and benefits mining can bring (Slack 2010). Some multi-stakeholders initiatives have discussed mining and sustainable development in that broadly way, instead of focusing in the sustainability of mining activities, they discuss the contribution of mining sector to the sustainable development of local communities and countries. They include many of the topics that other authors with the first perspective discuss like best environmental practices, but they also include socio-economic issues at regional and national level, focusing on aspects of good governance as the key for the contribution to sustainable development. For instance, the IGF initiative defines its actions as a commitment to poverty reduction and sustainable development (IGF 2010a),

referring to topics like poverty, revenues distribution, post mining transition, cultural issues and the importance of the integration with national policies for sustainable development. The World Bank also points out as key topics social issues like poverty reduction and calls to maximize the positive impact from mining to poverty eradication (World Bank 2011). Then, this study focuses the last perspective, considering that with certain good governance conditions it is possible that the non-renewable natural resources wealth can contribute to sustainable development at national and regional level.

3.2.2 Economic Impacts

Mining has the potential to create wealth in resource rich countries, however, many conditions must be fulfilled for it to produce benefits for the host countries. Exports, direct foreign investment and GDP growth of the are some of the main contributions for the national economy; however, most of the mineral resources are exported outside of the country and the processes to add value to the mineral are made in other countries, therefore the multiplier effects are limited for local economies (Crowson 2010). So the main source of benefits for the economy is the taxes and royalties. At the local level large infrastructure is needed in mining projects, like roads and power plants so its construction can benefit the local economies and the local people. Mining requires labor during the construction and the operation phases, so it is a source of employment in local areas and additionally the employees are trained improving their skills. Crowson (2010) also mentions other potential negative effects, like the Dutch disease, the inflow of money from the exports causes that the exchange rate appreciates so it can cause problems in the existing industries affecting their competitive in their markets that puts the economy in risk, so the success in the economy depends on the appropriate national economy management.

3.2.3 Environmental Impacts

Mining causes a number of environmental impacts, their degree depends on many factors like the amount of mineral extracted and the area of land affected (Peck and Sinding 2009); or the kind of technology and method, surface or underground (Durucan et al. 2006). Those effects are produced along

all the different stages of mining, from the exploration stage, when drillings can contaminate surface and underground water, the transportation of material and the construction of infrastructure affect directly the ecosystem increasing the exposition of wild life (Crowder et al. 1996); until the closure and post-closure stages when mining legacies, orphaned and abandoned mines are associated with waste pollution and affect human health and security (UNEP, UNDP, et al. 2005). The impacts also differ according to the mineral or metal mined. Gold mining affects particularly the mining areas, streams and other water sources increasing the concentration of heavy metals like lead, mercury and arsenic (Ogola et al. 2002), while coal mining has associated significant air pollution due to the fugitive emissions of gases and dust (Bian et al. 2010). The Table 3.1 presents the some of the main environmental impacts.

WATER RESOURCES	Acid mine drainage and contaminant leaching Erosion of soils and mine wastes into surface waters Tailing impoundments, waste rock, heap leach, and dump leach facilities Mine dewatering
AIR QUALITY	From Mobile sources (particulate matter, CO and volatile organic compounds) From Stationary sources (mercury, arsenic, sulfur dioxide, and other metals) Fugitive emissions Incidental releases of mercury Noise and vibration
WILDLIFE	Habitat loss Habitat fragmentation
SOIL QUALITY	Impacts on other activities like agriculture
CLIMATE CHANGE	Lost CO2 uptake CO2 emissions

Table 3.1 Impacts of mining projects. Source: ELAW(2010)

3.2.4 Social Impacts

Some of the negative impacts on the society are human displacement and resettlement; migration; lost access to clean water, impacts on livelihoods; impacts on public health, impacts to cultural and aesthetic resources (ELAW 2010). The World Bank (2011) considers that mining can contribute to poverty reduction, in despite of others, like Pegg (2006), point out the empirical evidence suggests that mining contributes more to poverty exacerbation. Other analysis, among them the extractive Industries Review (2003), a consultancy project for the World Bank, consider that some conditions of good governance are required; McPhail (2010) considers that national governments should integrate mining sector into the

national poverty reduction strategies, while Slack (2010) points out that the only way to take advantage of mineral resources is to use them wisely and without discarding other alternatives for development while the sector is articulated with broader development strategies and carefully monitoring respect its costs and benefits.

3.3 Initiatives on Mining and Sustainable Development

Different initiatives from groups of stakeholders have emerged aiming to discuss the mining industry performance in the context of sustainable development. Some of them have concentrated in the identification of the main issues to focus on, others go further presenting policy frameworks, recommendation and best practices. This section presents some of them.

3.3.1 Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF)

The IGF is a voluntary partnership integrated by 43 countries that seek to enhance the potential contribution of mining to sustainable development in developing countries improving the capacity building for good governance. The IGF is co-sponsored by South Africa and Canada and supported by some United nations programmes and other governments (IGF 2010b).

The IGF has defined a mining policy framework on mining and sustainable development, it defines as the objectives of the IGF to improve, enhance, and promote the contribution of the mining sector to sustainable development and poverty reduction. It contains the key elements and best practices required for good environmental, social and economic governance to contribute to those objectives. The Table 3.2 presents the summary of the policy framework.

AREA	DESCRIPTION	KEY ELEMENTS
Legal and Policy Environment	Provides clear lines of responsibility and Accountability, good governance and contributes to sustainable development in all aspects of social and economic life.	<ul style="list-style-type: none"> - Access to geological information - Updating of mining codes - Permitting process conditions
Financial Benefit Optimization	Taxes and royalties revenues reflect the value to society of the resources mined. They are collected and put to work in support of the sustainable development of the nation.	<ul style="list-style-type: none"> - Revenue generation scheme (Royalties and Taxes) - Distribution of benefits - Integration with national policy objectives
Socio-economic Benefit Optimization	The conversion of natural capital into human capital holds the greatest promise for sustainable outcomes from mining activities.	<ul style="list-style-type: none"> - Community participation - Socio economic planning in permitting process - Education and health as a national priorities - Employment opportunities - Mining and non mining business opportunities - Security Issues - Human rights, indigenous peoples, and cultural heritage
Environmental Management	The management of the natural resource base within ecosystems is the continuous responsibility of any Society seeking to become more sustainable.	<ul style="list-style-type: none"> - Management of water - Avoiding and minimizing adverse effects to biodiversity - Managing mining wastes - Emergency preparedness programme
Post-mining Transition	A mining operation which is considered consistent with sustainable development is one whereby planning for closure is present during the entire operation of the mine.	<ul style="list-style-type: none"> - Legal and regulatory frameworks for closure - Internationally accepted guidelines and best practices - Financial assurance mechanisms for mine closure - Orphaned and abandoned mines
Artisanal and Small Scale Mining	This is a complex and diversified sector that includes poor informal individual miners seeking to eke out or supplement a subsistence livelihood, to small-scale formal commercial mining entities that	<ul style="list-style-type: none"> - Integration of ASM into the legal system - Integration of ASM into the formal economic system - Reducing the social and environmental impacts of ASM

Table 3.2 Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development Policy Framework. Source: IGF (2010a)

3.3.2 The World Bank and the Extractive Industries Value Chain Approach (EIVC)

The World Bank’s objective, through the Sustainable Energy, Oil, Gas and Mining Unit (SEGOM), is to facilitate the contribution to poverty alleviation and economic growth of extractive industries through the promotion of sustainable development and good governance (World Bank 2011). The SEGOM establishes nine key topics in mining sector to focus on small-scale mining, mining sector reform, poverty reduction, local economic development, mining and environment, mining and community, mining closure, coal sector restructuring and aids and mining.

In order to help countries to translate extractive industries wealth into sustainable development the World Bank proposes the EIVC approach (Figure 3.1). It describes five steps during the process, the mining titles award procedure, the regulation and monitoring during the operation, the collection of taxes and royalties, the revenues allocation and the implementation of sustainable development projects. The World Bank considers that this approach can improve the management, accountability and transparency during each step and that it could and should be integrated with the national strategies to reduce poverty (Mayorga 2009).

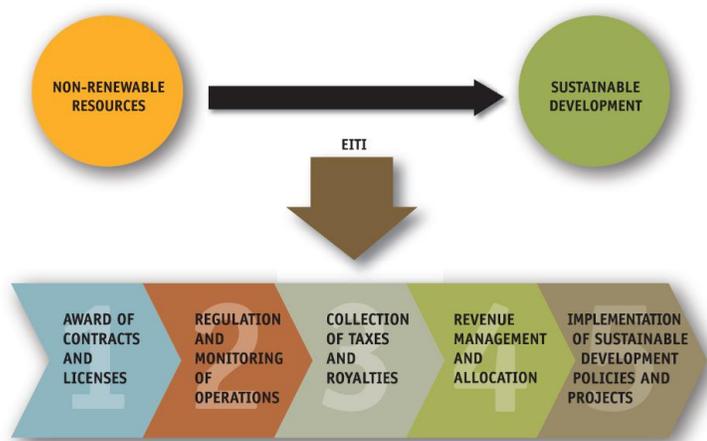


Figure 3.1 Extractive Industries Value Chain Approach. Source: Mayorga (2009)

3.3.3 The Mining, Minerals and Sustainable Development Project (MMSD)

The MMSD was a global project undertaken by the International Institute for Environment and Development as an initiative of the World Business Council for Sustainable Development supported of mining industry. Its objectives were to identify how mining activities can contribute to sustainable development and the key elements to improve the performance of the industry in the transition to sustainable development (MMSD 2002a). The MMSD developed regional and national projects, in the case of Latin America the project was oriented to understand the actor's views and emphasized in that the aim of the project was about how mining sector can contribute to sustainable development of the regions and the countries, instead of about the sustainability of mining industry (MMSD 2002b). Despite

the project concentrate in five countries, Bolivia, Brazil, Chile Ecuador and Peru, some surveys, interviews and workshops were done in more countries in Latin America. The project identified the next key elements:

- *Policies, instruments and capacities of public management.*
- *Access, use and generation of information about mining*
- *Amount and distribution of royalties and taxes.*
- *Local development (social, economic, cultural, environmental and institutional)*
- *Mining in Indigenous territories*
- *Environmental and Social performance*
- *Quantity and quality of employment*
- *Fields, mechanisms and capacities of the civil society organizations for participation in decision making process*
- *Mining in protected areas and areas of high biodiversity.*
- *Rights and resources stewardship (soil, water, biodiversity, minerals)*
- *Planning and impact management of mining closure*
- *Small scale mining*

3.3.4 Responsible Mineral Development Initiative (RMDI(2011))

The aim of the RMDI(2011), conducted by the World Economic Forum (WEF), was to identify what can be done in order to encourage a more responsible and sustainable mining. It identified some challenges of the mining industry exploring the perception, priorities, and concerns of the different actors and then it provided a six building blocks framework to address those challenges (WEF 2012). Despite this initiative doesn't make direct reference to sustainable development, it identifies some similar key elements than other initiatives. As a part of the process the RMDI(2011) conducted surveys and interviews in several countries, one of them was Colombia, information that results useful in order to compare the results related with the perception of the stakeholders and the key element obtained this study.

3.3.5 The International Council on Mining and Metals (ICMM)

The ICMM is an initiative of the mining industry integrated by some of the largest mining companies of the world and some regional miners and commodities associations. Its aim is to improve the sustainable development performance of the mining and metals industry. The ICMM provides a sustainable development framework for mining companies based on that issues identified by the MMSD project; that framework include three blocks, principles and best practices, reporting of the information and third party assurance.

4. MINING SECTOR IN COLOMBIA

Mining has influenced the Colombian economy and society for a large portion of its known history, before the coming of the Spanish people in the XV century, gold work was very important for many of the indigenous communities and its possessions was symbol of status (Reichel-Dolmatoff 1997). The abundance of gold encouraged the Spanish people to move to the new continent and to explore the mountains looking for the precious metal (Restrepo 1888) of the country. During the colonial period gold mining dominated the economy for close to 300 years (Colmenares 1987). Gold represented almost the 100% of the exports at least until the end of the XVIII century (Jaramillo 1987). Since that time mining was associated with several social conflicts like slavery, tensions with other economic activities, due to the scarcity of labor for activities such as agriculture. However it was also a source of wealth and welfare for the kingdom, gold mining drove the development of other economic activities like commerce, industry, cattle farming and agriculture (Jaramillo 1987). The extraction of gold was decreased due to the abolition of the slavery in during the first half of the XIX century (Ibid). Then after the independence of Colombia, the new republic strengthened large scale mining at the end of XIX and the beginning of XX century with the participation of foreign companies (Tovar 1987). Due to the increase in agriculture production, industry, transport and services, gold mining lost its dominant share in the national economy. After the Second World War other activities got more participation, industry, transport and services (Ocampo et al. 1987).

Another protagonist in the last decades has been coal. At the end of the 70s Colombia started to talk about large scale mining with the project El Cerrejón, one of the largest open-pit coal mine in the world. Gaitán et al. (2011) describe three stages for the mining sector in the lasts decades, the first the prominent role of the state in the 80's, regulating, managing and exploiting the natural resources, the national code of mines was created, this representing the first steps towards environmental norms for

mining. In the second during the 90s, the government adopted neoliberal reforms, reducing the role of the state in resource exploitation and encouraging the private sector and foreign investment. In 2000 the state sold its share of El Cerrejón mine to BHP Billiton, Glencore and Anglo American (El Cerrejón 2012). Regarding environmental issues law 99 of 1993 was promulgated as the base of the environmental policy, some regulations like environmental permits started to apply for mining industry (UPME 2011). The last stage, a new code of mines was promulgated as law 685 of 2001. This was oriented to encourage even more the private investment and leaving to the state a role as regulator and in charge of the administration and control instead as the role of entrepreneur (ibid). That code also established more areas of exclusion for mining making reference to environmental issues. During the last decade the role of the state has been to promote foreign investment, thus mining extraction has increased significantly, the number of mining titles that has been assigned by the mining authorities per year was 105 and in 2010 it was 1140, it means an increase of 1090 %, 5,13 % of the continental territory due to the incentive of mining activities mainly coal and goal (CGR 2011). However weak institutional capacity has generated reactions in many sectors of the civil society. These see mining as a big risk due to the high environmental impact and the poor contribution to the people's welfare in the current conditions. In 2010 a reform to the mining code was presented, law 1382 of 2010, however, it was declared unconstitutional, because it didn't fulfill the requirement of previous consultation with minorities, indigenous peoples and afro communities. Due to the importance of some articles about the exclusion for mining of natural reserves and other key ecosystems that reform is valid temporary for two years (Gaitán et al. 2011). Currently, the government is carrying out some other reforms to strengthen the institutional capacity creating the National Agency of Mining (ANM)¹ which responsibilities include the supervision and monitoring of labor, economic and environmental issues; it also changing the royalties system in order to have a better distribution of the revenues from mining and oil exploitation.²

4.1 Extraction of Minerals

Currently the most important minerals are coal and gold, but other minerals and metals are also exploited like ferronickel, emeralds, iron and limestone, among others. Colombia is the number one coal

¹ Decree 4134 of 2011 (November 3). Creation of the National Agency of Mining between the next six months.

² Legislative act 05 of 2011 (July 18). Constitution of the General System of Royalties and Decree 4923 of 2011 (December 26) operation of the General System of Royalties.

producer in Latin America as well as the country with highest reserves in the region, with around 6.7 Billion tons. It is number ten in reserves in the world, although only with the 0.8% of them (British Petroleum 2011). The Table 4.1 shows the amount of tons extracted in the last years in Latin America. The extraction in Colombia is not only the highest but also has increased much more than in other countries. That increase is due to the better prices in the last five years, the consolidation of new projects and the expansion of others (UPME 2011). The production concentrates in the northeast part of the country in the departments of La Guajira and El Cesar, and in the center in the departments Boyacá and Cundinamarca. More than 90% of the coal is exported (ibid).

Million ton	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Colombia	43,9	39,5	50	53,7	59,1	65,6	69,9	73,5	72,8	74,4
Mexico	11,3	11,1	9,6	9,9	10,8	11,5	12,5	11,5	10,5	9,3
Brazil	5,7	5,1	4,7	5,4	6,3	5,9	6	6,6	5,1	5,5
Venezuela	7,7	8,1	7	8,1	7,2	7,3	7,6	6,2	3,7	4
Other	0,8	0,5	0,7	0,3	0,5	0,9	0,5	0,6	0,8	0,7
Total	69,4	64,3	72	77,4	83,9	91,2	96,5	98,4	92,9	93,9

Table 4.1 Coal extraction in Latin America. Source: British Petroleum (2011)

Gold is becoming more important in Colombia, despite the extraction decreasing between 1991 and 1998. In the last years due to the gold prices and the improvement in technology the extraction has increased again (UPME 2011). Figure 4.1 shows the extraction in the last 10 years. Now gold is one of the more attractive minerals especially for multinational companies. In an inventory of 30 big mining projects for the next years, 16 are related with gold while 10 are related with coal (Ponce 2010). The Figure 4.2 shows the gold prices in the international markets.

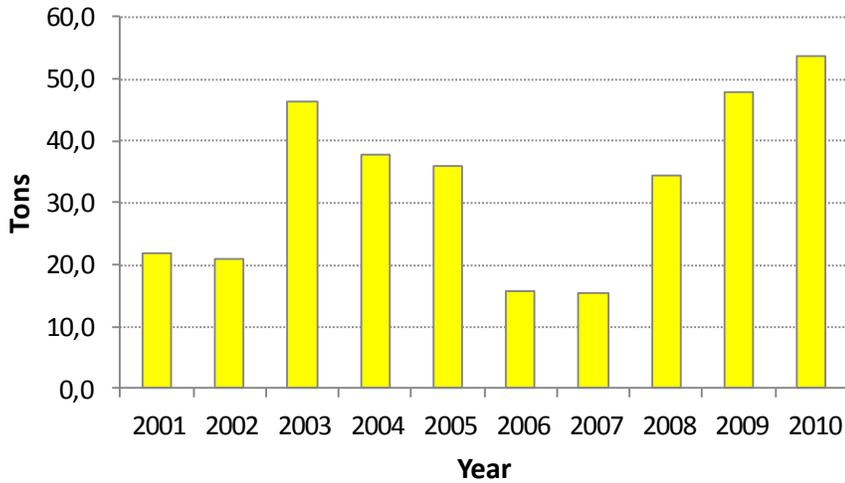


Figure 4.1 Extraction of Gold 2001 -2010 in Colombia. Source: UPME (2011)

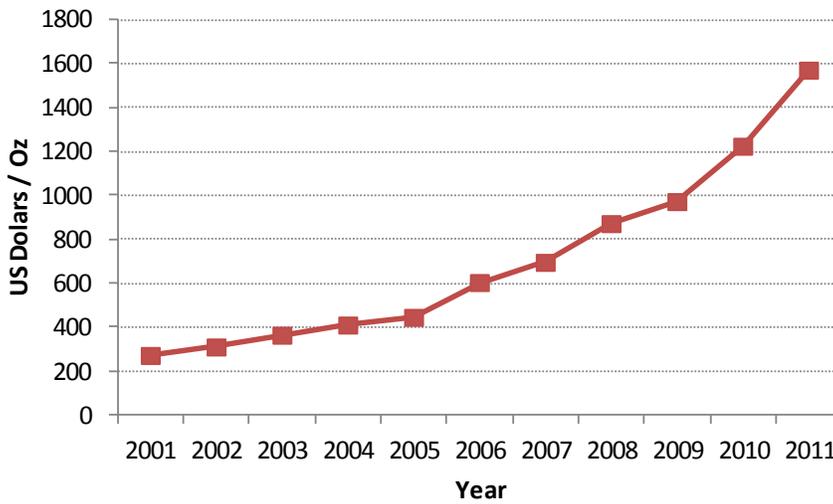


Figure 4.2 Average Gold Price per Ounce: www.kitco.com

The main source of ferronickel in the world is called Cerromatoso located in the department of Córdoba (UPME 2006), the extraction of this mineral reached 49.000 Tons in 2010. Emeralds are also important especially because of their quality, close to the 50% of the international market belongs to Colombian emeralds (ibid). The Table 4.2 presents the extraction of ferronickel and emeralds as well as the others from 2001 to 2010.

	Copper (kTon)	Iron (kTon)	Ferronickel (kTon)	Sulfur (kTon)	Limestone (kTon)	Sea Salt (kTon)	Earth Salt (kTon)	Silver (kg)	Platinum (kTg)	Emeralds (kcarat)
2001	9	637	38	69	9 075	384	184	7 242	673	5 499
2002	9	688	44	60	9 047	336	192	6 986	661	5 391
2003	7	625	46	73	9 836	236	208	9 511	841	8 963
2004	8	587	49	98	10 028	294	232	8 542	1 209	9 825
2005	9	608	53	65	12 018	429	216	7 142	1 082	6 746
2006	3	644	51	47	11 993	390	248	8 399	1 438	5 734
2007	4	624	49	49	13 229	310	204	9 765	1 526	3 389
2008	5	473	42	57	12 699	386	245	9 162	1 370	2 122
2009	6	281	52	54	11 449	357	255	10 827	929	2 945
2010	4	77	49	60	11 767	140	289	15 300	997	5 230

Table 4.2 Extraction of minerals and metals 2001- 2010. Source: UPME (2011)

4.2 Economic Issues

4.2.1 Gross Domestic Product

Colombia has had a continuous economic growth during the last years (Figure 4.3), the participation of mining industry in the GDP is around 2.3% (DANE 2012a).

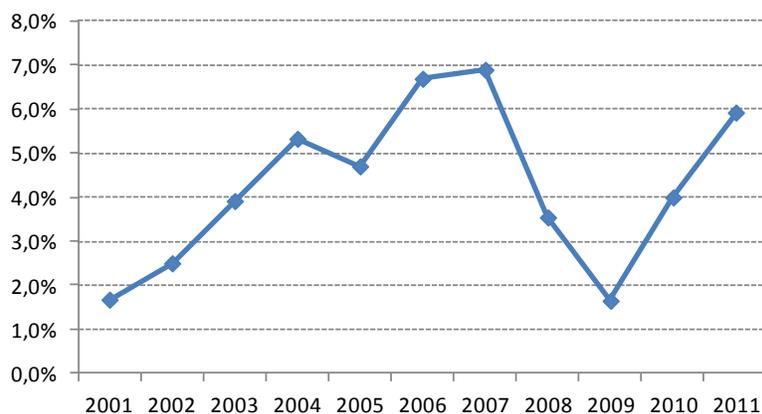


Figure 4.3 Colombian GDP Growth 2001 - 2011. Source: (DANE 2012a)

4.2.2 Exports

Today Colombian exports are mainly concentrated in extractive industries. The Figure 4.4 shows how oil, minerals and metal exports have grown since 2004 much more than manufactured products and agricultural products like coffee. Coal in 2011 reached USD 8.400 million, 15 % of the total exports, while oil USD 28.000 million with around 50% of the total exports (DANE 2012b).

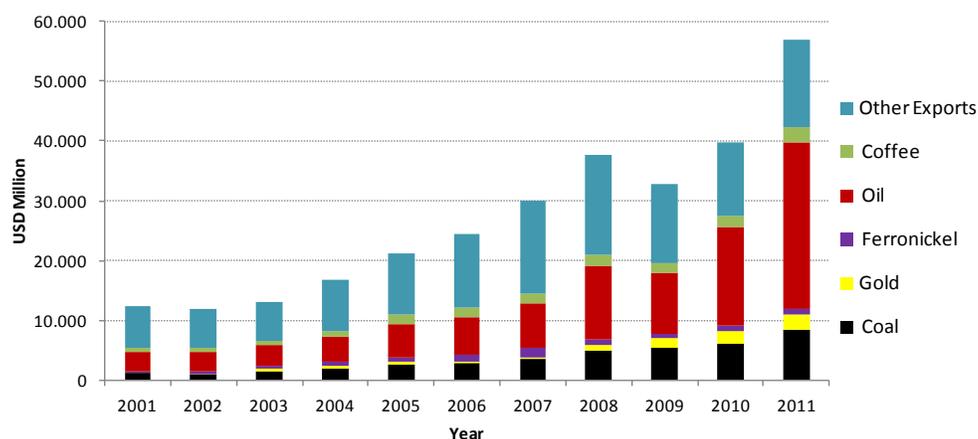


Figure 4.4 Colombian Exports 2001 – 2011. Source: DANE (2012b) and Banco de la República (2012a)

4.2.3 Foreign Direct Investment

The Figure 4.5 shows how since 2004 foreign direct investment has started to increase dominated especially by extractive industries. In 2011 mining sector receive USD 2.600 million, the 20% of the total inflow of money, while the oil sector got USD 5.000 million with a share of 38% (Banco de la República 2012b).

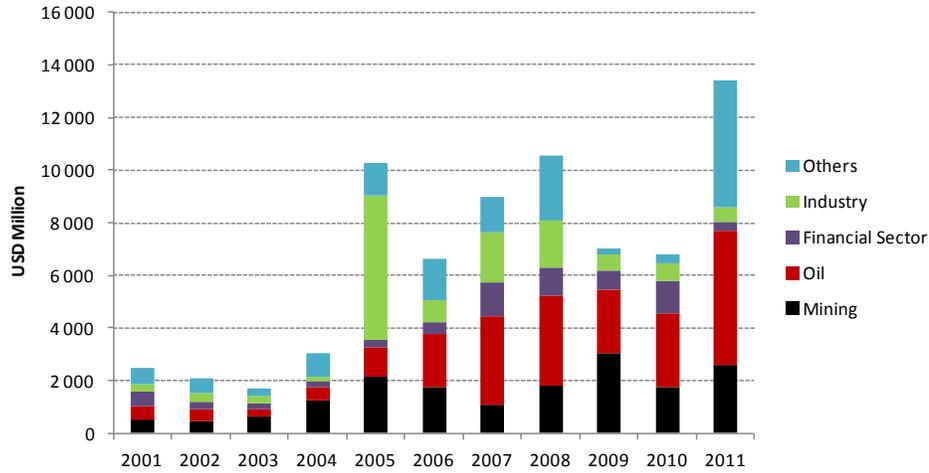


Figure 4.5 Foreign direct Investment in Colombia. Source: Banco de la República (2012b)

4.2.4 Royalties

In Colombia the exploitation of non-renewable natural resources results in an attractive economic compensation for the state. Those royalties are a very important source of money for social, economic and environmental development projects according to the Political Constitution³. The Figure 4.6 presents the behavior of the royalties from mining sector in the last eight years.

³ Defined by the article 360 of the Political Constitution of Colombia.
http://www.secretariassenado.gov.co/senado/basedoc/cp/constitucion_politica_1991_pr011.html

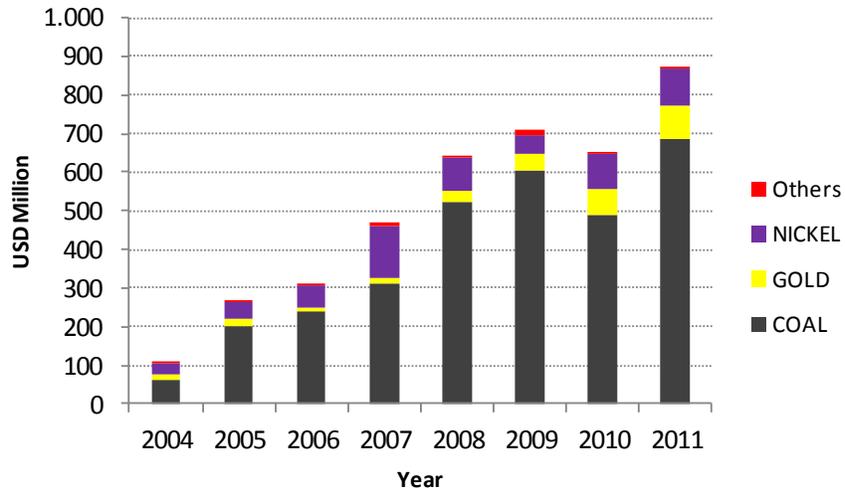


Figure 4.6 Royalties from mining. Source: Ministry of Mines and Energy, calculation⁴

4.3 Environmental Issues

4.3.1 Biodiversity

Colombia is one of the most biodiverse countries in the world thanks to its equatorial position (Romero et al 2008). The Table 4.3 shows the number of species by country according to the taxonomical group where Colombia appears in the top five in those groups.

⁴The royalties data is available in Colombian pesos, to calculate the amount in US million the average annual exchange rate was used from the Banco de la República.

Plants	Amphibians	Reptiles	Birds	Mammals
Brazil -53,000	Colombia (698-733)	Australia -755	Colombia -1865	Brazil -523
Colombia -41,000	Brazil -517	Mexico -717	Peru -1703	Indonesia -515
Indonesia -35,000	Ecuador -407	Colombia -524	Brazil -1622	Mexico -502
China -28	Mexico -284	Indonesia -511	Ecuador -1559	China -499
Mexico -26,000	China -274	Brazil -468	Indonesia -1531	Colombia -471

Table 4.3 Number of species by taxonomical group for the 5 most biodiverse countries. Source Profepa (2002) cited by Romero et al. (2008)

In the country there are three big biomes. 92% of the continental area is covered by tropical rain forest, there is 7% dry tropical forest and the 1% tropical desert. The WWF recognizes that the tropical forest, together with the coral reefs, are the most biodiverse in the world. According to the identification of the Global Ecoregions⁵, there are thirteen of them in Colombia. Those regions have very special irreplaceable biodiversity and are very important for conservation goals (Olson and Dinerstein 2002). The Figure 4.7 show the level of threat of the terrestrial Ecoregions in Colombia due to the human action. There are three of them in the critical, one is the Northern Andean Montane Forests considered a priority for conservation due to its biological richness and endemism (Armenteras 2003)

⁵ The Global Ecoregions World Wild Foundation http://wwf.panda.org/about_our_earth/ecoregions/



Figure 4.7 Conservation Status of Terrestrial Ecoregions in South America. Source: WWF

4.3.2 Mining and the Environment

According to Rudas et al. (2007) mining activities are considered one of the most important causes of loss of biodiversity in Colombia, together with land use change, illegal cultivates and the construction of infrastructure. While there has been some progress in the environmental and mining regulation in order to protect areas of rich biodiversity, there are still significant tensions and conflicts between the environmental policy and extractive industries that endangered the ecosystems and the biodiversity along the country (Gaitán et al. 2011). The reform to the mining code, law 1382 of 2010⁶, established conditions to exclude certain areas for mining activities. The areas addressed were those that have been declared as delimited as protected areas and areas of development of the renewable natural resources or of the environment. They include zones in natural parks system, regional natural parks, forest reserves, Páramo⁷ ecosystems and wetlands listed in the as the international importance by the Ramsar Convention. However, due to the weak application of the environmental regulations a lot a mining titles

⁶ Law 1382 of 2010. Reform of mining code, it was declared unconstitutional by the Constitutional Court, however, it has effects during two years, in that time a new reform project should be presented to the congress. Available in http://www.secretariasenado.gov.co/senado/basedoc/ley/2010/ley_1382_2010.html

⁷ Páramo ecosystem:

have been assigned in those areas (ibid). Figure 4.8 (a) shows the current mining titles and the defined protected areas, some of them are overlapped, however, the requests for mining titles is even more complicated than the Figure 4.8 (b) shows. They cover mainly the Andean mountains and as it was showed above in the Figure 4.7 that region is one of the most endangered Ecoregions according to the WWF. Additionally, there are problems to relate the information about the excluded and protected areas with the mining information (Gaitán et al. 2011).

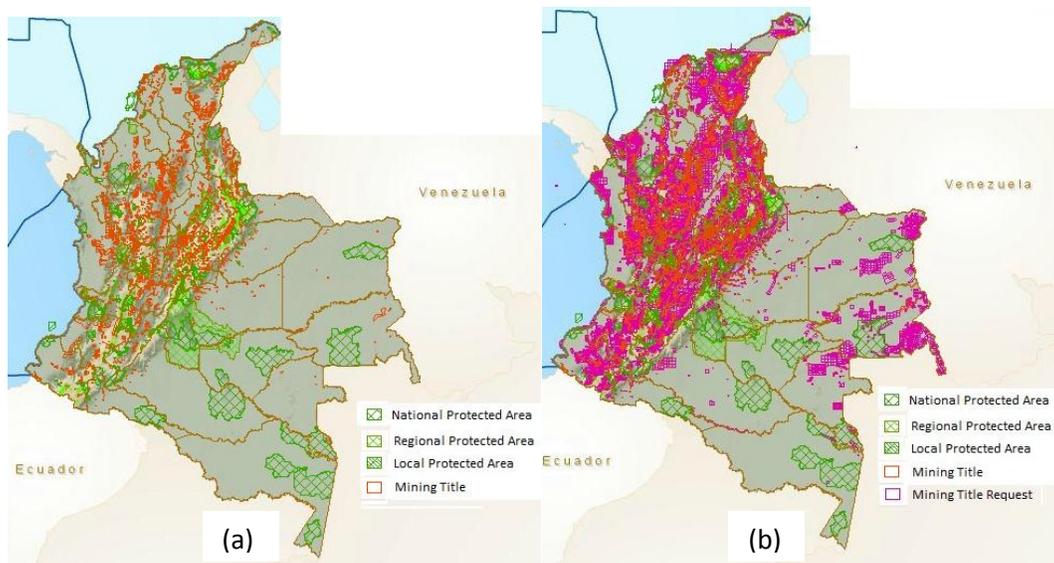


Figure 4.8 (a) Mining titles and protected areas. (b) Mining titles requests and protected areas. Source: Tremarctos – Colombia System⁸.

With respect to mining legacies there is no regulation addressing them and the environmental and mining authorities are just starting in the definition of the problem and there is a lack of knowledge about this issue (CGR 2011). Some of the negative impacts are the deterioration of the water quality due

⁸ These maps were generated with the online information system Tremarctos - Colombia available in <http://www.tremarctoscolombia.org/>. Rodríguez-Mahecha, J. V., F. Arjona-Hincapié, T. Muto, J. N. Urbina-Cardona, P. Bejarano-Mora, C. Ruiz-Agudelo, M.C. Díaz Granados, E. Palacios, M.I. Moreno, A. Gomez Rodriguez & Geothinking Ltda. 2010. Ara Colombia. Sistema de Información Geográfica para el Análisis de la Gestión Institucional Estatal (Módulo OtusColombia) y la Afectación a la Biodiversidad Sensible y al Patrimonio Cultural (Módulo Tremarctos-Colombia). Versión 1.0 (03-06-2011) Conservación Internacional-Colombia & Contraloría General de la República e Instituto Nacional de Vías - INVIAS. Bogotá Colombia.

to mercury and cyanide, deforestation, erosion, hydrologic cycle affection, reduction in the amount of ground water and worsening of the landscape among others. Those problems are the result of all the different kinds of mining, not only the illegal and small scale mining but also large scale mining projects such as those in the department of El Cesar (ibid)

4.4 Social Issues

4.4.1 Poverty and Inequality

Poverty is one of the most complicated problems in Colombia and one of the biggest challenges the country faces (DNP 2011). The level of poverty in 2010 was around 44.1%, close to 20 million people, and extreme poverty was 14,8% (Figure 4.9), despite the reduction in the last years it has been lower than in Latin America (UNDP 2011a) In the Human Development Index, shown in the Figure 4.10, it is possible to see how Colombian index is below the average of Latin America and Caribbean, it is because the health and education aspects remain lower despite the economic aspects has had a better performance.

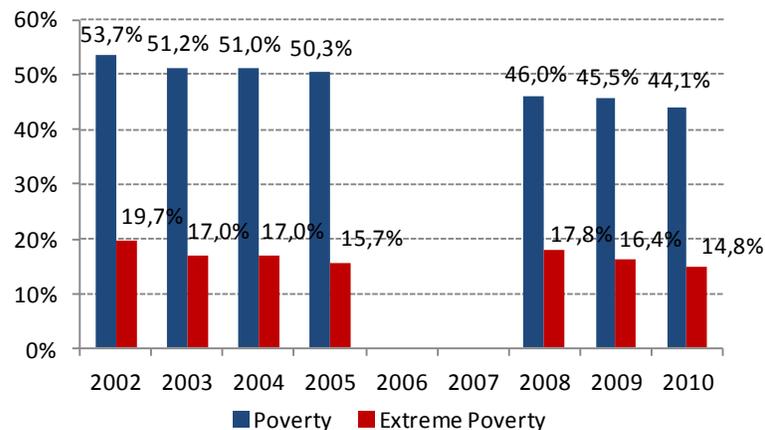


Figure 4.9 Poverty and extreme poverty indexes. Source: DANE, DNP (2012)

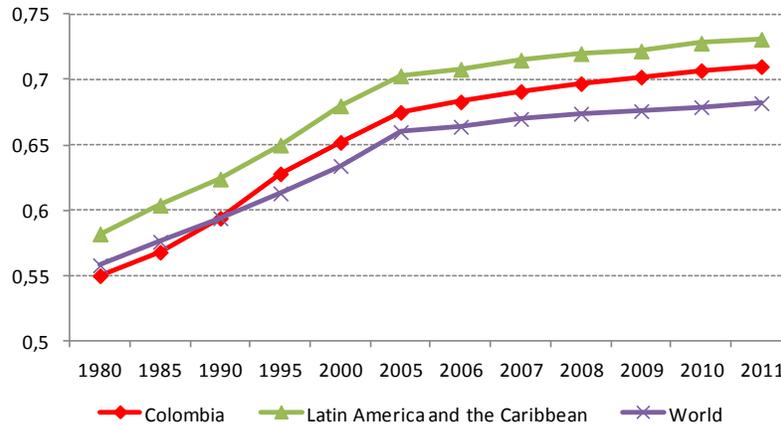


Figure 4.10 Human Development Index HDI 1980 - 2011 Source: UNDP(2011a)

Colombia presents a high level of inequality, the GINI index is 0,58, one of the highest in Latin America, that situation of inequality is more significant between rural and urban areas due to the high land ownership concentration (UNDP 2011b).

4.4.2 Local Development

One of the major criticisms of the mining sector is the limited capacity to transform the economic benefits in better life condition for the people especially in mining regions. Then, its effect could be positive or negatives depending in different factors. The study of Cardenas et al. (2008) analyses the contribution of mining to the regional socio economic development. Their conclusion is that is has a positive effect, however, they also conclude that in order to have such development a high quality human capital and strong institutions are needed. They pay special attention to the departments of La Guajira, Cesar, Córdoba, Chocó and Boyacá, where mining activities have a very important impact due to the high participation of mining in the GDP. However, those regions do not present better performance according to the Human Development Index. The Figure 4.11 shows the HDI by department according to the National Report of Human Development 2011.

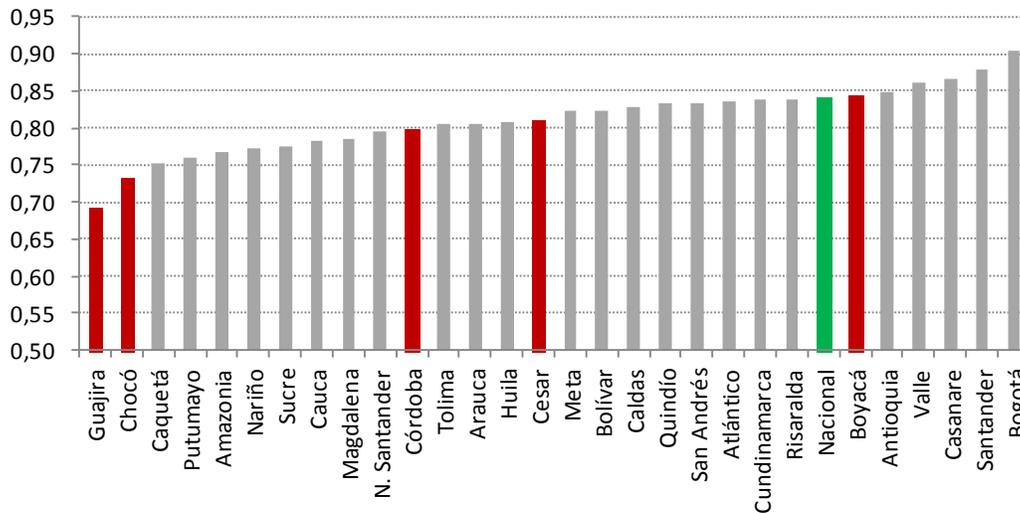


Figure 4.11 Human Development Index by Department. Source: National Report of Human Development 2011. UNDP(2011b)

In the case of the department of El Cesar Bonet (2007) shows how despite the growth of the GDP per capita being three times the national growth in the period 1990 -2004, due to the rapid increase of the coal industry, the levels of poverty, illiteracy and unsatisfied basic needs have been above the national levels. Bonet (2007) says one of the faults is the weak linkages and weak multiplier effect with the rest of the economy. He also indicates that similar situations have happen in other departments like La Guajira, Casanare, Arauca and Sucre, where despite the high level of royalties from the extractive industries production, there has not been improvements in people’s life conditions and wellbeing.

4.4.3 Indigenous Communities and Territories

According to the census 2005 the 3,4% of the Colombian population belong to an indigenous community (DANE 2007). The Political Constitution of Colombia⁹ establishes that the exploitation of the natural resources in indigenous territories have to be done without deteriorating the cultural, social, and economic integrity of the communities and that all the decisions regarding that require the participation of indigenous leaders. Approximately in 1% of the indigenous territory mining titles have been assigned (Gaitán et al. 2011). The Figure 4.12 shows the overlapping between indigenous territories and mining titles.

⁹ Article 330 of the Political Constitution of Colombia.



Figure 4.12 Mining titles and indigenous communities' territories. Source: Tremarctos – Colombia System.

4.4.4 Illegal Mining and Conflict

Illegal mining is present in most of the mining regions in Colombia, according to the Ministry of Mining and Energy. In the report of the Contraloría General de la República (2011), there are around 9 420 illegal mines, 59% of construction materials, 15% of Coal, 6% of gold among others. That report also points out the weakness of the mining and environmental institutions to supervise and control mining activities and as a consequence the terrible environmental impact on the environment. In addition, illegal mining in the context of an internal armed conflict generates other kind of problems. Gaitán et al. (2011) points out how in some regions extractive industries areas overlap areas with high presence of illegal groups, like guerrillas, paramilitary groups and drug dealers in rural areas. In regions like Chocó, Antioquia, Santander, Nariño and Cordoba, the gold exploitation is related with the presence of those illegal groups, and it constitutes a financial source for their illegal actions (Gaitán et al. 2011). According

to the report of La Procuraduría General de la Nación (2011), the National Police has reported that mining illegal activities fund illegal armies in at least ten departments of the country.

4.5 Governance in Mining Sector

The structure of the mining sector is integrated by different institutions. The Ministry of Mining and Energy is in charge of the mining policy design and also of the regulation of the sector through other institutions associated to it, the Mining and Energy Planning Unit (UPME) is in charge of planning and design the mining development plans. The Geological Service is responsible of the information and scientific knowledge. The National Agency of Minerals¹⁰ (ANM) assigns the mining titles, follows up and supervises the concession contracts. In mining departments regional governments perform are in charge of the contracts and their supervision.

The environmental authorities that interact with mining industry are Ministry of Environment at national level and the Regional Autonomous Corporations (CARs) ant regional level. They are in charge of awarding environmental permits for the exploitation process. Other authorities interact with the system like the Contraloría General de la República, in charge of the surveillance and control of the public resources, there are delegate divisions for mining and environment affairs. Finally, in the General System of Royalties take part the National Department of Planning, in charge also of the design of public policies and the National development Plan, and other national authorities and regional and local governments. Regarding the private sector there are several associations at different levels large scale, medium and small scale mining. On the other hand, more no governmental organizations and other sector of the civil society are participating in the discussion around mining sector.

All the institutions are governed by the Political Constitution of Colombia that established the management of the non-renewable resources taking into account the principles of sustainable development. Additionally to the specific mining regulations and policies other normative are part of the system, like the environmental policy and those that govern the royalties system. Table 4.4 presents some of those policies and laws.

¹⁰ The ANM was established by the decree 4134 of 2011 and stated operations on 03 May 2012, before the Colombian Geological Service was in charge of its functions.
http://www.minminas.gov.co/minminas/index.jsp?cargaHome=2&opcionCalendar=4&id_noticia=1454

Theme	Policy /law	Description
National	Political Constitution of Colombia	Establishes the management and exploitation of natural resources to ensure its sustainable development, conservation, restoration or replacement and the payment of royalties.
	National Plan of Development 2010 - 2014 Law 1450 of 2011	Establishes the public development policies, its focused are to consolidate security, create more jobs and reduce poverty.
Mining	National Plan of Mining Development 2006-2019	Establishes the long term vision of the mining sector.
	Mining Code Law 685 of 2001, Law 1382 of 2010	Promotes technical exploration and exploitation of mineral resources to supply the internal and external demand.
Environment	Environmental Policy Law 99 of 1993.	Defines sustainable development concept, the adoption of the Rio Declaration principles and establishes environmental permits.
Royalties	General System of Royalties Law 141 of 1994, Legislative Act 5 DE 2011	Defines the amount and the distribution of the royalties

Table 4.4 Policies and legislation of the mining sector

5. RESULTS AND ANALYSIS

This section presents the analysis of the perception of some representatives of the three groups of actors: government, industry and civil society. The aim is to explore their views and concerns and to identify those topics that they consider more relevant in Colombia in order that mining contribute to sustainable development in the country and in the mining regions. The IGF (2010a) policy framework is used to organize and analyze the different identified topics; some results are compared with previous studies like the MMSD (2001) in Latin America and the RMDI(2011) in Colombia. This section also contains the analysis of the focus of mining policies presented in the documents the National Development Mining Plan (UPME 2006) and the National Development Plan (DNP 2011), and the extractive value chain approach taking into account the respondents views and other documents from the state. The appendix 2.C presents parts of the interviews took into account during the analysis.

5.1 Understanding of Sustainable Development and Mining

The first step was to assess the general perception about mining in the context of sustainable development, mining's positive contribution and negative impacts. All the stakeholders understand that mining should contribute to sustainable development and that implies not only to optimize the financial benefits but also to minimize the environmental impact and to contribute to more robust social system to improve the people's welfare. However, the Industry and the Government-Mining respondents emphasize more on the responsibility with the environment, good practices and use of technology and associate less with social issues. Such point is described by O'Faircheallaigh (2010) who points out that usually more attention is paid to economic and environmental issues than to social sustainability. This view illustrated that point:

It is the application of the best environmental practices and the development of cleaner technologies.

Industry-Association

With respect to the positive contribution of mining the Industry and the Government-Mining respondents consider that it is an important driver for the economy, one of the main sources of income for the government, taxes and royalties for social investment among others. They also mention the contribution to local development highlighting job opportunities for locals. On the other hand, despite the fact that Civil Society and the Government-Environment respondent recognize revenue generation and employment as a possible benefit, they consider the costs have been higher than those benefits so far due to the lack of institutional capacity and appropriate policies. For them the level of royalties are low, there is not a fair distribution of them and these stakeholders consider that they don't compensate the environmental and social negative effects. In addition, they consider the quality and quantity of jobs is low. Moreover, the negative effects include water cycle problems, mining legacies, and air quality, and human, land conflicts, loss of social linkages and indigenous knowledge, and economic enclaves, among others. Other interviewees consider that mining causes negative effects on the environment and the society as other industrial and human activities that can be compensated. Then, it is possible to distinguish two groups, the first integrated by the industry and the Government-Mining, who consider that mining has undoubtedly a positive contribution and that the negative impact can be compensated. And a second group the Civil Society and the Government-Environment respondents consider that the environmental and social costs are higher than the potential benefits in some occasions. The last view reflects the views of Crowson (2010) when he mentions that mining has the potential to create wealth but only depending on the conditions the benefits can be materialized.

Some of the respondents, the Government-Environment and the Civil Society-Consultant, clarified that is not possible to talk about sustainable mining in similar terms along the lines of arguments posed by Hilson and Basu (2003), due to the extraction of a non-renewable resource, however they agree about the possibility to transform the financial capital into social and human capital taking about the whole society and economy.

5.2 Key Topics on Mining

The second step was to ask the respondents about the topics they considered the most important to deal with in order that mining contributes to sustainable development of the country and the regions. A number of key topics were pursued in areas that had been clearly delineated during the review of literature (Chapter 3). Open questions were posed in each of the key topic areas in order to explore more their views, the last question was about the challenges and the future to confirm or clarify the most important topics.

5.2.1 Legal and Policy Environment

Policy frameworks

The interviewees identified two main weaknesses respect to mining and environmental policies. First, at least one respondent per group pointed out the lack of coordination between mining and environmental policies; therefore, there is not articulation between mining and environmental authorities, this view illustrates that point:

There's still a shock. I think, policy has to combine both types [...] to have more common points

Industry-Foreign Company

Secondly, most of the stakeholders expressed the necessity to establish better policies because current policies don't cover essential points like environmental performance, following up of the mining

benefits, or a mining stewardship strategy. For instance, both governmental respondents considered that mining policies are concentrated in the promotion of the private investment and sector competitiveness, while representatives from Civil Society pointed out that important issues are still pending like mining code reform. Those results differ from the views presented by the RMDI(2011) where they say that Colombia has an extensive legal framework that covers all the key aspects of mining, although the private stakeholders considered that policy makers were focused on short term decisions.

In some extent the next statement of the Ministry of Mining and Energy during the 4th Mining Convention corroborates that actors' view, about the lack of coordination and the focus of policies, when he emphasized in the investment and talked about the environmental standards:

We have to support the investment in exploration. We shouldn't try to change the royalties and environmental standards before finishing our phase of exploration. First, we should find out what our real reserves are, then we debate issues like royalties, then we debate issues like the environmental standards that should be applied in the production phase.

Ministry of Mining and Energy- February 8, 2012

The IGF (2010a) considers that mining codes and standards should be revised periodically incorporating best practices and that they should cover exploration, closure and post-closure stages.

Institutional capacity

The interviewees agreed that to improve the institutional capacity is undoubtedly one of the most important aspects in order to contribute to sustainable development. The government respondents said improvements in the mining and environmental institutions were important in order to control and monitor mining concessions, especially given the increase in the mining titles award in the last decade. One of them said *"institutional capacity is going through a critical time"* while the other considered *"we have a mining boom without rigorous controls"*. They emphasized in the necessity to enhance the technical capacity, introducing more scientific knowledge and improving human capital, a view that was shared by the Industry-Association participant. Similar results were presented by the RMDI(2011) who identified insufficient capacity governmental bodies and authorities. Likewise in the MMSD (2001) all the groups of stakeholders in Latin America considered institutional capacity and public management as one

of the main three concerns in mining. Some respondents referred to the weak institutional capacity at local level, where good governance is fundamental to achieve sustainable development (McPhail 2010), for instance the respondent of the Civil Society–NGO noted that reforms at the local level in environmental authorities are pending showing that the attention is given to the national level.

Then, to have strong institutions is considered an indispensable condition to achieve sustainable development. Technical mining and environmental capacity at national and local level should be revised carefully in order to improve the mining sector performance.

Access to information

All the respondents pointed out information access and availability as an important topic; they consider that there is a lack geological information, as well as limited knowledge about renewable and non-renewable natural resources and the impacts of mining. The interviewee from the Industry–Association mentioned that the lack of adequate delimitation of natural protected area makes more difficult to have an adequate environmental performance.

On the other hand, Civil Society–Consult ensures that despite the burden of proof lying in their area *“miners never answer technically and never answer with arguments”*, while the participant from the Government–Mining states *“they don’t do it with social and environmental technical criteria”* talking about environmentalist and their negative concept about mining. A similar perception was presented by RMDI(2011), indicating that certain groups make unrealistic demands causing confusion and misinformation. This shows that the lack of information affects the different groups of actors and that they consider it very important in order to have a better social and environmental performance.

5.2.2 Financial Benefit Optimization

Royalties and taxes regimens

All the actors consider mining revenues, royalties and taxes, as a very important source of income for the government and the main way to transform natural resources wealth into social benefits like education and or health. However, as it was presented above, for the Government-Environment and the Civil Society-Consultant interviewees they are not enough. They argue that a change in the percentage is needed in order to compensate the negative impact is required, as well as a better distribution of those benefits. In that sense, the IGF (2010a) framework considers that the revenues optimization is essential for sustainable development and that governments should address the problem of redistribution. In the MMSD (2001) project in Latin America the amount and the distribution of royalties and taxes appeared as a key issue, however, its results showed that neither actor considered them among their five priorities. In this study the respondent from the Government-Mining emphasized in the importance of the royalties, but showed less importance to their management when he noted:

Their responsibility (mining companies') is to pay the royalties and that's all [...], something different is the management that is given to those royalties, but that is not related with the mining sector.

Government–Mining

The IGF (2010a) also considers that mining revenues management is important to integrate the fiscal instruments with the national policy objectives, as well as the World Bank in the EIVC Approach (Mayorga 2009). This topic will be discussed broadly in the section 5.2.2.

Transparency

At least three respondents pointed out transparency as a key issue to deal with. The Government-Mining interviewee considered it important in the agreements between the government and the industry, while the Government-Environment participant considered transparency is essential in the information the industry provides, like the amount of mineral extraction reports that is the base for royalty's calculation. In the RMDI(2011) study in Colombia the interviewees considered that the lack of transparency, especially in the awarded of mining titles, was an obstacle and that this relevant topic required significant improvements. Hence transparency is fundamental element in order to materialize the potential benefits of mining into sustainable development and poverty alleviation as the World Bank

presents in it EIVC approach (Mayorga 2009), presented above in the section 3.3.2 and developed below in the section 5.2.2. of this document.

5.2.3 Socio-economic Benefit Optimization

Local Socioeconomic development

The IGF (2010a) considers that how mining supports local and regional development is an important issue in order to address the distribution of the benefits. Further than the direct effect of mining like jobs creation, it refers to the strategies to increase the transformation of natural capital in human capital, integrating the community, addressing basic needs like health and education, and encouraging the creation of non-mine related business and services. The World Bank also considers local economic development as one of the key topics in mining and mentions the importance to encourage spillover effects and to reduce the local communities' economic dependence on mining activities, as common reasons of the limited benefit that local communities get from mining (World Bank 2011)

Regarding this area, there are two main points were presented by the participants, one is the lack of contribution of mining to improve the communities' life conditions and the other is the lack of multiplier effects and linkages with other economic sector in order to have economic development and avoid the risk of enclave economies.

The next quote illustrates the first point:

In the areas where the highest importance activities are developed, [...] those zones are in the same way where the highest indexes of unsatisfied basic necessities are presented, deficit in basic public utilities like aqueduct, sewer system, and deficit in basic services like health and education

Government–Environment

The Civil Society–Consultant Mining described mining as a source of conflict in the host areas mentioning “*Land ownership conflict*”; “*water pollution conflict*”; “*conflict because it spoils local economies*”; similarly the RMDI(2011) respondents pointed out different conflicts.

Regarding the second point the Government–Environment and the Civil Society respondents agreed that currently mining sector has not the capacity to develop local economies, one of them noted:

Mining strategy is really only two elements which don't have productive linkages, coal and gold they are 75-80% of the mining strategy.

Civil Society–Consultant

The other respondent of the civil society considered the same topic arguing that most of coal and gold are exported without adding any kind of value in the country. Similar results are presented by the RMDI(2011), it shows that the perception of the stakeholders is that despite the potential mining has, it fails in the integration with the rest of the economy and that the policy makers are the responsible to create an enabling environment to improve the productive capacity at local level. On the other hand, for industry and the Government–Mining respondents considered that mining is very important for local development providing jobs and also through the Corporate Social Responsibility programs.

The respondents in general showed a lot of attention to local development, so it results one of the most important topics because it relates many other issues, economic, environmental and social. Local communities could be the recipients of benefits like jobs and royalties but also they suffer most of the negative consequences, something that in particular worried the civil society and government; the MMSD (2001) results showed that local development is the more important issue for the civil society in Latin America and the second for the government.

Stakeholder participation and responsibility

All the respondents considered it essential to achieve the participation of all group of actors to find agreements and a common strategy to improve the mining sector's performance and called for a higher involvement of the Civil Society. Some of them considered that the current relationship is not good, the Government-Environment participant described it as “*conflicting*” especially the community with the industry and also with the mining authorities. The Civil Society-Consultant interviewee also talked about a conflicting relationship and highlighted the gap between mining and environmental authorities, similarly as it was described in the section 5.2.1 about the lack of coordination between mining and environmental policies.

All the respondents pointed out responsibility as something fundamental and called for a sincere commitment in particular to the industry. For instance, the Industry–Foreign Company interviewee defined an interesting concept “*auto-regulation*”:

It is when you assume by your own the responsibility to protect the environment, it is not necessary that the state remind you it all the time, you don't need a fine to understand what you have to do, it comes from your self

Industry–Foreign Company

That kind of commitment is a very positive contribution from the industry to enhance a better social and environmental performance despite the weaknesses and gaps of the regulations. One example where it could help would be in the lack of protected area delimitation exposed by the Industry–Association:

When it is said, that in the Páramos mining is forbidden, that we think is that there is an authority that tell us where the Páramo starts and where it finishes, but with a scale of 1 to 250.000, there is a difference of 2.5 km, which is impossible.

Industry-Association

The Government–Environment illustrated how the “*auto-regulation*” should be applied:

If it is said that I can't mine in the Páramo or in a natural park, is basic, [...] it is not to take advantage of whether the Páramo is delimited in the right scale or not.. No! [...] If I see that there is a seam, a soil, a climate, this is like a Páramo, here we can't mine.

Government–Environment

With regard to the civil society involvement, the Civil Society–NGO participant pointed out that it is necessary it to get more involved in mining issues, to learn more about the sector, to have a higher sense of ownership regarding the environment, as well as to propose the needed changes, as part of the Civil Society's responsibilities. The Civil Society–Consultant considered as one of the main challenges for the future to continue strengthening the social movements around mining integrating also academia, journalists and other people interested in a more adequate social and environmental performance of mining. The Government–Environment respondent pointed out that communities should have been involved during all the stages of the mining projects including during the planning and development of them, it is also a recommendation of the IGF (2010a). Similarly the RMDI(2011) views highlighted the

importance of broad stakeholder participation and the MMSD (2001) results showed that the participation of the civil society was a main concern for it itself and also for the industry.

Community trust and image

When it was asked about the main challenges for the future both respondents coincided about the importance to get the communities trust, a view shared by the Government–Mining participant presented this view when he said *“mining is very stigmatized”* and also when he talked about the negative image arising related to illegal mining. They considered there is a misconception and it is necessary to improve the communication with the communities and to present and to explain more of the benefits the communities can get. Similar results were showed by the RMDI(2011)study; the mining sector had a negative image, and the need to communicate more of the impacts of mining to the communities was identified as a public and private actor concern that.

5.2.4 Environmental Management

Environmental performance

Environmental performance of mining industry was the most discussed issue by the different participants. The Civil Society and Government–Environment Interviewees focused more on the negative impacts on water, biodiversity and ecosystem, as well as how the environmental degradation diminishes the people’s life conditions. On the other hand, the Industry and the Government–Mining interviewees concentrated more in the importance of good practice implementation, mitigation and compensation. In the first group, water issues were the main concern, the Government–Environment respondent pointed out the impact of rivers deviation on communities in desert areas, the Civil Society–Consultant responder presented how a social movement was created around the protection of water, while another member of the civil society considered that mining and water are two inseparable topic when said *“when someone talks about mining they obviously are talking about water”*. Civil Society–Consultant interviewee highlighted the particular conditions of biodiversity in the country; and that particularly

mining activities such as open-pit mining can be more harmful. The IGF (2010a) considers water issues and biodiversity part of the most four important elements to deal with regard to the environmental management.

As it was presented in the section 5.1 Industry and Government–Mining respondents showed more attention to environmental issues in the relation mining sustainable development. For them the responsibility of the mining industry is the implementation of good practices. The Government–Mining respondent considered that mining “*causes an impact as all the human activities*” and that mining sector has to work together with environmental authorities to manage it. For the industry, compensation is considered one of the best ways to manage the environmental impact, the Industry–Association respondents said about the damage in an ecosystem “*I can compensate in other ecosystem*”, perspective that is not shared by respondents like the Civil Society–Consultant presenting the example where a large-scale coal mining company pretend to move a river in a semi desert area¹¹, he pointed out “*What can we compensate here?*”. Nevertheless the Industry-Foreign Company and the Government-Mining interviewees argued that some people on the environmental side exaggerate the environmental impact due to the lack of technical information; a discussion that was presented in the section 5.2.1.

Then, environmental issues is one of the main topics to deal with, in the MMSD (2001) project in countries like Peru and Ecuador stakeholders saw it as the issue with the among the highest priority (MMSD 2001), industry and government evaluated with the priority number one while civil society assigned a lower priority.

5.2.5 Post-mining Transition

Mine closure

Formal mining closure is considered one of the key issues in mining sector that is required in order to contribute to, or ensure sustainable development and poverty alleviation (IGF 2010a, Word Bank 2011). It not only involves environmental impact but also is of the utmost relevance to the local economy and

¹¹ Make reference to the case of the Coal Company El Cerrejon and the Ranchería river in the department of La guajira. Trasteo de un río en La Guajira <http://www.elespectador.com/impreso/vivir/articulo-317964-trasteo-de-un-rio-guajira>

the communities when mining projects finish, thus it is a sustainability issue (UNEP et al. 2005). However, most of the respondents pointed out that in Colombia there are not policies and regulation about this important topic. The interviewee from the Government-Environment mentioned aspects like the availability of jobs are topics not included in the regulations, whereas the Industry–Foreign Company referred to absence of norms regarding environmental liabilities. This topic is new in many countries (ibid), the MMSD (2001) showed that despite actors took it into account they gave low priority this issue in Latin America.

5.2.6 Artisanal and Small Scale Mining

Illegal mining

In general the respondents didn't expressed specific views about small scale and artisanal mining, however, the Government–Mining and the Civil Society–NGO respondents did mention illegal mining and its connection with environmental and social problems. The Minister of Mining and Energy made an important remark to clarify the misconception about this kind of mining and the association with illegal mining. He called “informal mining” those groups of miners that seek to legalize their activities but find difficulties during the process, while defined “criminal mining” as those mining activities that are degrading the environment and financing illegal armed groups. The Productivity and competitively policy is oriented to improve the small scale and artisanal mining as a mechanism for local development (Ministry of Mining and Energy 2007).

The Table 5.1 presents the summary of the eleven key issues that were identified and the specific problems they indicated.

CLASSIFICATION IGF	ISSUES	PROBLEMS
Legal and Policy Environment	Policy Frameworks	Lack of coordination between mining and environmental policies Current policies are not well defined and incomplete Policies are focused on promotion and production only
	Institutional capacity	Weak technical capacity Weak title monitoring and control capacity
	Access to Information	There is incomplete about protected areas There is not proper information for a cost-benefit analysis Industry don't support and communicate properly the environmental assessments Civil society don't support and communicate properly its arguments. Scientific knowledge is needed to support decisions
Financial Benefit Optimization	Royalties and taxes Regimens	The royalties doesn't compensate the negative impacts It is necessary to follow up the royalties management
	Transparency	Open concessions and agreements between the government and mining companies. Transparency the information reported by the industry. There in corruption in public entities.
Socio-economic Benefit Optimization	Local Socioeconomic development	Mining areas have the lower socioeconomic indicators There in not multiplier effects and linkages with other activities and value added process causing problems like economic enclaves.
	Stakeholder participation and responsibility	The relation between the actors is seen as conflict. The Civil Society should be more Involved Real actors commitment and coordination is required Industry should auto-regulate and not to take advantage of the regulation gaps.
	Community trust and Image	Mining has been stigmatized The mining sector requires to gets the communities' trust
Environmental Management	Environmental Performance	The sector should encourage good environmental practices. It is necessary to take into account the social and economic impact of environmental degradation The affection of water resources generates social and economic impacts and it is not considers as a priority. In a biodiverse context mining regulations should be much more strict. Compensation of the environmental impacts is not enough for a good environmental performance.
Post-mining Transition	Mine Closure	There are not policies or regulations about mining closure at all. Mining closure involves environmental, social and economic issues.
Artisanal and small scale mining	Illegal Mining	It generates conflict all kind of conflicts, social, economic and environmental Illegal mining is one of the main reason of the bad image of the sector.

Table 5.1 Summary of the respondents' views. Key issues and problems.

5.3 The focus of Mining Policies

According to the different sustainable development and mining initiatives, like the IGF (2010a), poverty alleviation is central objective of mining policy, the World Bank considers it as a key topic and

recommends pro-poor governance in extractive industries (Extractive Industries Review 2003). In that sense, mining policies should be oriented to poverty alleviation and articulated with national policies and strategies for poverty alleviation (McPhail 2010). In Colombia, national policies define poverty reduction as one of the main challenges to face in the next years and also consider mining sector as one of the main driver for economic development (DNP 2011). However, the focus of mining policies is to promote private and foreign investment in order to increase the production (Ministry of Mining and Energy 2007, UPME 2006). The National Mining Development Plan (UPME 2006), considered one of the main policy instruments that guide the development of the mining sector (CGR 2011), established the vision of the mining sector *“in 2019 the Colombian mining activity will be one of the most important industries in the continent, and it will have enhanced in a significant manner its share in the national economy”*; and defines three main objectives for the plan :

- Attracting an increasing number of clients into the market of access to mining-resources;*
- being able to obtain for the State a higher capture of value as a consequence of the successful results of the mining activity;*
- and optimizing the supporting processes required by the mining institutionalism in order to meet the value offers to be structured by it for the different client segments.*

Table 5.2 shows the goals of the National Mining Development Plan (UPME 2006); similar goals are presented in the National Development Plan 2010 -2014 (DNP 2011), adding the surveillance of concessions and the reduction of the number of accidents. Most of those goals follow up the level of production and the contribution and the improvement in the institutional capacity. This coincides with the view of some of the interviews, as it was presented in the section 5.2.1.

Slack (2010) consider that is necessary to know what is the strategy that articulate mining with regards to the national economy and to know if the benefits compensate the negative impacts and contribute to poverty reduction. In order to follow up the strategy and to track the benefits from mining monitoring indicators for individual projects should be adopted, like poverty indicators (Slack 2010, Extractive industries 2003), and those social, environmental and poverty reduction indicators and goals must be considered with the same importance as economic and financial goals Pegg (2006), however, there are not goals or indicators that relate the sector’s contribution with poverty alleviation.

Doubling the current coal production volume
Increasing fourfold precious ore production.
Transforming Colombia into one of the main three destinations of private investment, internal and external, destined to mining exploration
Enlarging the area contracted for geological-mining exploration purposes.
Optimizing mining contracting and customer service processes.
Obtaining an improved knowledge of the country's subsoil
Developing agendas in all the mining districts, for productivity and competitiveness purposes
Increasing production in community mining developments
Achieving a mining GDP growth above the Latin American average

Table 5.2 Goals National Mining Development Plan. Source: (UPME 2006)

The lack of harmonization with the national policies and strategies for poverty reduction is in some extend illustrated by the view of the Government–Mining participant, talking about the royalties' management, said *“that is not related with the mining sector”* (section 5.1.1). It shows that there is not a clear commitment of all the stakeholders to the whole process of the mining value chain. Taking an opposite view, the ICMM, an industry initiative led by the most advanced mining companies in the world, recommends to the industry to work together with the other stakeholders to implement public policies and regulations that allow the sector to contribute to sustainable development (ICMM 2011).

In addition, the focus mainly on the production growth, as the two first goals presented in the Table 5.2, makes it more difficult to contribute to sustainable development and poverty alleviation. The Agenda 21 points out:

a development policy that focuses mainly on increasing the production of goods without addressing the sustainability of the resources on which production is based will sooner or later run into declining productivity, which could also have an adverse impact on poverty.

Agenda 21. United Nations (1992)

Then, again the coordination between mining and environmental policies mentioned by the respondents is fundamental and requires a depth understanding of the relation to mining, its environmental impact and the effect of both on people's life conditions, in order to avoid cases where the potential positive contributions of economic growth to poverty reduction are overcome by the negative effects of the environmental degradation on poverty. Such situations are described by Ekbohm and Bojö (1999) and Duraipah (1998), and they point out that in such cases end of mining results in the exacerbation of poverty. In this way Stiglitz (2006) states about the simultaneous positive and negative effects of mining:

Too often, the only benefit to the country from a mine is the few jobs it creates, and the environmental damage of the mine may simultaneously destroy jobs elsewhere (for instance, in fishing, as catches in polluted water diminish) and, sometime in the future, impose enormous budgetary costs as the government is forced to pay for the cleanup.

Joseph E. Stiglitz, Making Globalization Work (2006, p. 141)

Slack (2010) considers that talking about sustainable development in mining, to prove that the costs are outweighed by the benefits is a fundamental necessary condition. So that's why in the understanding of sustainable development and mining, presented in section 5.1, for some respondents it was impossible to mention a positive contribution without questioning first the balance between costs and benefits.

5.4 The Extractive Industries Value Chain Approach

The revenues from mining, taxes and royalties, were considered by the respondents the main benefit from this activity. However, some of them, like the Government–Environment and the Civil Society members, considered that those benefits are not materializing in benefits for the local areas and in general for the country, they are not helping to improve the living conditions of the people or giving them more opportunities. The World Bank suggests to use the EIVC approach, presented in the chapter 3, in order to have a better stewardship of non-renewable resources revenues to better contribute to sustainable development and poverty alleviation (Mayorga 2009). Then below it is briefly analyzed the mining process in Colombia focus on the revenues management using that approach and taking into account the views of the respondents and the data from the analyzed documents including the information about the new institutional reforms. The first stage is the award of the contracts and

licenses to exploit the natural resources, the EIVC approach points out basically the next points: Transparent, competitive and non-discretionary procedures for the award of exploration, development and production rights; clear legal, regulatory, and contractual framework, and well defined institutional responsibilities (Mayorga 2009). It suggests to separate the commercial activities and the regulatory role of the state, something that in Colombia was clearly defined in the mining code, law 685 of 2001, and the state started to concentrate in fostering, monitoring and regulating the industry (UPME 2006). With respect to the mining titles assignment process the mining code established it on the basis first-come, first-served, however, recently the National Development Plan has created the strategic mining deposits areas, which will be assigned under special conditions established by the mining authority. However, the assignment of the mining titles by the first method has overwhelmed the institutional capacity due to the increase in the number of requests during the last years. Regarding these points the respondents considered that the authorities don't have the capacity to control that amount of requests and new contracts. Currently the assignment process has been stopped until the new ANM starts to operate. With regards to the environmental licenses recently, despite recently the new National Authority for Environmental Licenses has been created, the actors pointed out that the institutional capacity at national and especially at regional level is very poor. This step of the process also makes reference of the sharing of benefits between the government and the companies. Gaitán et al. (2011) point out that despite the reform of the royalties system the share of money that the state gets from the mining business, like the percentage of the royalties established by the Law 141 of 1994¹², hasn't been revised. Similarly the Government–Environment argued that the current level of royalties were low and didn't compensate the negative impacts. Regarding this Waye et al. (2010) highlight the importance of the level of taxes as a mechanism to increase sustainability and that a good regulation framework taxes could be increased.

The second stage, regulation and monitoring of operations, emphasizes in the importance of having a well-defined regulatory framework and good capacity building in order to ensure the transparency and effective resource management (Mayorga 2009). These are also concerns pointed out by the respondents, the absence of normative respect issues like the closure of mines and the weak technical and operative capacity of the mining and environmental authorities in order to enforce the law, as well as the lack of coordination between them. The government is carrying out some changes in order to

¹² Law 141 of 1994, article 16.

http://www.secretariasenado.gov.co/senado/basedoc/ley/1994/ley_0141_1994.html

improve the information management, the monitoring process and the technical capacity like implementing the supervision of every mining concession. However, there is still uncertainty about the reform of the mining code¹³, and its change will be valid only for two years, during that time the government has to present a new proposal.

In the third step, collection of taxes and royalties, the value chain approach makes to the administrative and audit capacity and recommends the use of international accounting practices as well as mechanisms like EITI in order to guarantee the transparency of the transactions. In Colombian case, there is some controversy about the level of taxes that companies are effectively paying. This concern has been discussed by the actors, some consider that there is a significant difference between the gross rates of taxes and the effective rate the companies pay. Indeed, such differences could in some case be equal or even exceeds the benefits from royalties¹⁴ (Rudas 2012), due to taxation incentives like discounts for capital investments. In order to have a better balance of the economic benefits the transactions should be easily traceable (Mayorga 2009), however, it is not an easy task to calculate the effective benefits from taxes and royalties according to the observed during the presentation Mining and Public Finances¹⁵(Rudas 2012). Recently, the government has expressed its intention participation in the EITI¹⁶, however, the commitment of mining companies is also necessary to monitoring this part of the process.

With respect to the revenue management and allocation phase, in the new General System of Royalties the Fund of Saving and Stabilization was created in order to save some money to compensate possible future periods of reductions in the amount of royalties. Such can be caused by the decrease in the extraction level or by the drop of the international prices. There are not specific policies or strategies to deal with other effects produced by the inflow of foreign capital, at least presented as a part of the mining strategy.

¹³ Sentence Sentencia C-366/11 Constitutional Court. The mining code was modified by the law 1382 of 2010 but was declared unconstitutional by the Constitutional Court in May 2011, due to the lack of consultancy process with indigenous communities and other minorities. According to the sentence the effect of this modification will be valid for 2 years only. Available in http://www.secretariasenado.gov.co/senado/basedoc/cc_sc_nf/2011/c-366_1911.html#1

¹⁴ According to the notes taken during the presentation of Rudas G. - Presentation Mining and Public Finances, 4th Mining convention, Bogota February 8-9.

¹⁵ During the conference the presenter showed the difficulty of the calculations, regarding the different sources and the availability of the data.

¹⁶ EITI (2012) Colombia and Ukraine commit to implement EITI [Online] <http://eiti.org/news-events/colombia-and-ukraine-commit-implement-eiti>

Regarding the last stage, the implementation of sustainable development policies and projects, according to the constitution, part of the royalties from the exploitation of non-renewable resources finances projects that encourage the social, economic and environmental development of the regions. However, according to the views expressed during interviews the local areas have been negatively affected by mining activities and there has been not an improvement in the life conditions of the people. Gaitán et al (2011) argue that there is not an improvement in the unsatisfied basic needs index in the mining regions despite them having had the majority of the money from royalties, they also argue that there are a close relation with corruption at the local level and even influence on illegal armed groups. The new General System of Royalties seeks to distribute better those resources increasing the participation of non-producers regions, in order to manage better the investments in the projects a management body was created, it is in charge of establishing the conditions for the projects and to prioritize the investments and also to follow up the results. However, there are some critics that point out that the reform is more oriented to generate more income for the central government and more discretion in the use and assignation of the resources, but the problem in the local institutions will continue (Gaitán et al. 2011).

5.5 Final Reflections

Despite most of the key topics identified in the interview process and document analysis being included in the IGF (2010a) and the EIVC (Mayorga 2009), those initiatives don't cover specific issues that the respondents considered important like the gap between mining and environmental authorities. For instance, despite the EIVC approach concentrating on the revenue management and transparency it doesn't suggest to analyze if the level of royalties and taxes is or not adequate, while Waye et al. (2010) consider that it could be a good mechanism to increase sustainability. Additionally, also pays little attention to important issues like environmental performance and how it diminishes the quality of people's life. The IGF (2010a) gives a lot of importance to environmental management concentrating in minimizing the impact on ecosystems, water and biodiversity and consider financial and socio-economic issues in the whole framework, however, it doesn't consider or suggest to ensure the cost benefit positive balance, the application of the precautionary principle or the decision of not to mine in the cases that there is uncertainty about the impacts. Interesting points like responsibility, where is necessary

comply the law but also to going further with a strong environmental commitment like the concept of “*auto-regulation*” suggested by the Industry-Foreign Company respondent, deserve more attention and to be included as a private initiative that enrich the system in case of normative gaps. As such, despite these frameworks considering the most important issues and going quite deeply into some of them, it is important to take into account other independent sources of sustainable development and mining studies and also the perspectives and views of the stakeholders in the context that is being analyzed.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Mining is becoming more important for the national economy in Colombia, but it has already had negative environmental and social impacts. It is on the cusp of growing rapidly, hence the present time is crucial for achieving improvement to basic frameworks that determine whether the sector will contribute to development for the country or will exacerbate social and environmental problems. International organizations like the World Bank consider that under certain conditions mining can contribute to sustainable development. Two fundamental portions of sustainable development are poverty and environmental degradation (Kempton and Martens 2007), the IGF (2010a) presents a policy framework and defines as the main objective the contribution to sustainable development and poverty eradication. How then can mining contribute to sustainable development? This study aimed to answer that question in a country with 44% of the population in poverty and considered one of the most biodiverse in the world. Eleven key issues were identified that the respondents from the government, the industry and the civil society found important. Policy framework, institutional capacity, access to information, royalties and taxes regimes, transparency, local socioeconomic development, stakeholder participation and responsibility, community trust and image, environmental performance, mine closure and illegal mining were considered the most important to tackle in the mining sector if it is to contribute to sustainable development of the country. Using an analysis of the respondents’ views and an assessment of policy documents three main gaps were identified regarding the policy framework and the institutional capacity. First the aim of current policies is to increase of the extraction of minerals and

metals, focused on the promotion of the private investment; this was verified with the analysis of some policy documents where the vision and the objectives and goals are defined mainly in terms of the increase of the coal and gold exports and in the potential to attract more investors. However, the different initiatives suggest that the main objectives should be the contribution to sustainable development and poverty reduction. Second, the findings suggest that there is inadequate harmonization between the mining and environmental policies and institutions and they are not coordinated with national policies for sustainable development and poverty reduction. Third, respondents from the Civil Society and the Government associated with the environment consider that it is unclear how the benefits from the revenues overcome the negative impacts on the environment and the society – this being a key area best practice delineated by the literature considers it important to track how the mining outcomes translate to benefits that contribute to sustainable development and poverty eradication.

6.2 Recommendations

Based on the topics and gaps identified during the result analysis, the literature and the initiatives the recommendations for each of the stakeholder groups are:

6.2.1 For the Government

When asked what can the government do in order that the mining sector contributes to the sustainable development of the country?, this study finds that it should redesign the policies towards a sustainable development strategy articulated with the national sustainable development and poverty alleviation. That strategy needs to achieve the points listed below.

1. To conceive the strategy as a system that integrates and harmonizes activities between the different governmental bodies and their processes that have to do with the mining value chain; this including mining and environmental authorities as well as all those bodies in charge of the revenue management, taxation and control; with common objectives and goals.
2. To define as the fundamental objectives:

- To reduce poverty at national, regional and local level;
 - Minimize the environmental degradation caused by mining activities;
 - Optimize the financial benefits from mining for the state.
3. To have a strong technical and institutional capacity built on scientific knowledge that allows the system to:
- understand the relation mining, environment and society, especially the effects of environmental degradation on poverty in the context of a very biodiverse country;
 - establish socio-economic goals and indicators at national, regional and local level that allows the stakeholders the tracking of the success of the strategy.
 - make decisions supported by cost benefits analysis and taking into account the precautionary principle, ensuring that the economic benefits overcome the negative impacts of environmental degradation and then effectively contribute to reduce poverty.
 - control and monitoring the system to ensure the appropriate performance along the whole value chain.
4. To include essential policies and regulations to contribute sustainable development identified by previous initiatives development that fulfill conditions such as those listed below.
- the establishment of normative frameworks that ensure that mining companies present mining closure and post closure plans before the projects start, considering not only the environmental issues but also social-economic issues and also providing the adequate financial assurance.
 - Design strategies to reduce the dependence on mining and encouraging the creation of non-mining related activities in mining areas to facilitate the post mining transition.
 - Promote the spillover effect and the creation of linkages with other industries and to add value in the country.
 - Ensure the transparency during the whole value chain, including the mining title award process, the operation, the revenues management and collection and the final investment in sustainable development at the different levels.
 - Encourage the participation of the other actors during all the phases of the mining projects.

6.2.2 For the Industry

When asked how mining companies can facilitate and help mining to contribute to sustainable development, the answer would be based upon building real commitment to the delivery of sustainable development goals as a fundamental parameter of their role. As such, they would need to:

- make decisions under sustainable development principles, complying with the law and having auto-regulative capacity to have a better performance despite the gaps in the regulations and laws and to become more robust the system;
- transparency engagement in all the activities including the mining title and concession process, the elaboration and report of the socio environmental impacts assessments and the payment of taxes and royalties;
- participate together with the government and the civil society in the sustainable development strategy, helping to strength the institutional capacity and supporting the local socio-economic development initiatives.

6.2.3 For the Civil Society

When asked how civil society can facilitate and help mining to contribute to sustainable development, according to the results of this study it should get more involved with the mining sector in all the levels national, regional and local. Civil society needs to be in a position to propose improvements, to follow up the performance of the system and to provide feedback of the outcomes. To enrich its participation more scientific and technical knowledge are required. Such will need to involve more groups such as the academic community to give support and weight to its claims and proposals.

6.3 Further Research

More research is needed about methods and mechanisms which allow the stakeholders to assess and to follow up the performance of the mining sector not only in terms of the revenues but also integrating social and environmental aspects, like a set of sustainable development indicators. Additionally, more work could be done about the understanding of the relation between mining and poverty, analyzing specific cases at local and regional mining areas in order to identify the social, economic and environmental variables and conditions that improve or diminish people's life conditions.

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Appendix 1. Data Collection

A. Consent Form

FORMATO DE CONSENTIMIENTO DE PARTICIPACIÓN EN INVESTIGACIÓN

El objetivo de este proyecto es el de contribuir con un mejor entendimiento acerca de cómo el sector minero puede contribuir al desarrollo sostenible en Colombia. Dentro del proceso de investigación está el conocer la percepción de los diferentes actores con el fin de identificar los principales aspectos que se requieren tener en cuenta en la transición hacia el desarrollo sostenible, relacionados con la economía, el ambiente, la sociedad, la institucionalidad y las políticas y regulaciones relacionadas.

Esta investigación corresponde a la tesis de grado del programa de maestría en Estudios Ambientales y Ciencia de la Sostenibilidad de la Universidad de Lund, Suecia, adelantada por Edwin Antonio Malagón Orjuela.

Las condiciones de participación son las siguientes:

- Se realizará una entrevista semi estructurada con duración aproximada de 40 minutos.
- Las preguntas y la información suministrada estarán relacionadas únicamente con el objetivo del proyecto.
- La información suministrada será utilizada sólo dentro de este proyecto de investigación.
- En cualquier momento será posible abstenerse de responder cualquier pregunta que no se desee.
- Será posible realizar aclaraciones o adicionar información después de finalizada la entrevista.
- Para facilitar el trabajo de investigación la entrevista será grabada y transcrita.
- Ningún nombre será mencionado en el proceso de investigación, sólo se hará referencia al grupo o subgrupo de actores al cual pertenece el entrevistado para facilitar el análisis de la información.

Para cualquier información acerca del proyecto por favor comunicarse con Edwin Antonio Malagón Orjuela al correo electrónico edwinmalo@hotmail.com o al teléfono 3163989510. Información adicional acerca del programa maestría y la universidad por favor comunicarse al correo electrónico info@lucsus.lu.se y en la página web <http://www.lumes.lu.se>.

Estoy de acuerdo en ser entrevistado dentro de este proyecto de investigación:

Si__ No__

Estoy de acuerdo en ser grabado durante esta entrevista:

Si__ No__

Firma del participante _____ Nombre del participante _____ Fecha _____

Firma del Investigador _____ Nombre del Investigador _____ Fecha _____

B. Interview Guide

Before the interviews there was an introduction about the purpose of the project clarifying that the study was about how mining can contribute to sustainable development of the country and the mining

regions, not about the sustainability of the mining industry. The guide was designed taking in to account questionnaires from previous studies like the MMSD (2002c) Latin America and the global project (MMSD, PricewaterhouseCoopers 2001). The questions could have changed slightly according to the interviewed actor and in order to follow up the questions during the interview. All the interviews were conducted in Spanish, so the interview guide was translated.

Understanding of SD in Mining Sector

These questions aim to find out how the different stakeholders understand SD in mining sector and to see what they perceive as the benefits and impacts of mining.

Main Questions	Additional Questions
-Can you please tell me, in your opinion what does SD mean in mining sector?	
In your view, how does mining contribute to SD?	-What is the contribution at national level? -What is the contribution for local communities?
-Can you explain to me how you perceive mining interacts with the environment?	-Now can you give me your impressions of the severity of the impacts of these items you have mentioned – and the sorts of costs to society that they may entail?

Key issues for SD in mining sector

These questions aim to identify the issues that the stakeholders consider important and how they think they can possible to improve.

Main Questions	Additional Questions
-Can you please tell me, how could the mining sector improve its performance in order to achieve SD?	-How can mining improve the environmental performance? -How can it increase the social benefits?
-What are the key issues to focus on to improve the performance of MS?	-Why? -How can they be improved? -Do you consider other aspects important?

Role of the actors

These questions pretend to identify important elements associated with the relations among the different actors

Main Questions	Additional Questions
- In your view, what is the role of the different actors in mining sector?	-How do they embed the principles of SD in their actions? -Who are them? -How is the relation among them? -How is it possible to improve them?

Policies and regulations and institutions

These questions try to find out what stakeholders think about current policies and regulation, and the institutions and the perception about what is missing and possible improvements.

Main Questions	Additional Questions
-Do you consider that there are areas where current policies and regulations related to achieving SD could be improved?	-If so, how? -What have been the recent improvements? -What do you think they should include? (environmental, economic, social aspects)
- What do you think about how the institution helps to improve the mining sector performance?	-How can it be improved?

Challenges for the future

This section aims to know what the main challenges are to achieve sustainable development.

Main Questions	Additional Questions
How do you see the future of mining sector in the next years?	-How do you see the sustainability in the long term? -What are the main challenges to contribute to SD? -Can you see any barriers that can make it difficult?

Completion

Main Questions	Additional Questions
-Do you want to add something else about mining and SD?	

Appendix 2. Data analysis

A. Key Topics – Respondents Matrix

This table presents the main ideas of each respondent and the main topics identified during the data analysis according to the suggestion of Bryman (2008). A previous matrix was elaborated with verbatim transcriptions in Spanish.

IGF Category	Issues	Government Mining	Government Environment	Industry Association	Industry Foreign Company	Civil Society Consultant	Civil Society NGO
Legal and Policy Environment	Policy Framework	No coordination btw env & min Current focus on competitively, investment & ownership Need of new policies	Focus only on promotion No env and social issues	No coordination btw env & min	No coordination btw env & min Env more developed than min	There isn't a min policy Conflict btw min and env	Pending policies upgrade (mining code, CARs)
	Institutional capacity	Current critical moment Impossible to control min titles Need of technical capacity	Lack of institutional capacity Need of technical capacity Lack of control and monitoring	Need of strong inst Need of technical capacity	Env more developed than min inst	Need of strong inst Env inst don't work	Need of strong inst No attention to local level inst
	Access to Information	This is an unexplored country	More Inf about the natural resources in min areas To know real costs & benefits	There isn't a proper delimitation of protected areas		Ind doesn't support env assessments properly.	Min is a risk requires information Scientific knowledge for decision making
Financial Benefit Optimization	Royalties and taxes	The most important benefit Their investment isn't related with min sector	Don't compensate negative impacts.	The most important benefit.		Don't compensate negative impacts.	
	Transparency	In agreements & business	In Ind reports				Corruption in public inst
Socio-economic Benefit Optimization	Local socio-economic development	CSR is a contribution	Min regions have the worse socioeconomic indicators Enclave Low quality jobs	Qualified and good paid jobs	Jobs Better life conditions	No linkages or multiplier effect. Negative social impacts	No linkages or multiplier effect. Lack added value
	Stakeholders participation and responsibility	Need of agreements Get CS more involved More responsible Ind	Conflict relation First step is to obey the law Is a responsibility of all	Need of Actors articulation CS need to be more informed	Need of Auto regulation More public-private partnership CS should be open-mined	Conflict relationship No balance of power	Responsibility and commitment of all CS should follow up sector Ind more change will
	Communities' trust and Image	Min is stigmatized		Community's acceptance is one of the main challenges	In necessary people trust min		
Environmental Management	Environmental Performance	Need of good env practices Some exaggerate due to lack of inf	Water cycle, rivers deviations, min legacies, public health, air pollution	Responsibility & best practices Compensation and mitigation	Compensation and mitigation Env impact sometimes is an excuse of some	Water pollution forever Worse effects in a biodiverse country Health, land ecosystems degradation	Min is also about renewable resources. Water Compensation isn't enough
Post-mining Transition	Mine Closure	There are not regulations They should consider social and economic issues	When min finishes there aren't more jobs. Economic alternatives are needed		There are not regulations for min legacies		There are not regulations
Artisanal and small scale mining (ASM)	Illegal Mining	Generates bad image for min One of the main priorities					Supports violence

IGF Category	Issues	Government Mining	Government Environment	Industry Association	Industry Foreign Company	Civil Society Consultant	Civil Society NGO
Understandig	Concept	Responsible min Env friendly min Help poverty reduction	Min isn't sustainable SD involves people and env min is more than the extraction of minerals	Good env practices and technologies	Long term planning to improve people's life conditions, the economy and low env impact	Min isn't sustainable SD transformation of money in social benefits.	
	Positive	Driver of the economy Foreign investment Royalties Knowledge & Technology	We haven't seen the benefits. Costs are higher the benefits Need of redistribution of benefits Low quality jobs	Qualified jobs Local development Investments in the env care Income for the state		Money but not the proper amount Few jobs	
	Negative	Min causes impact as other activities	Impacts on env and public health Life quality diminishing Migration Economic enclave	Ecosystem damages but can be compensated		Env degradation Economic conflicts Loss of indigenous knowledge and social linkages	Impacts on the ecosystems No people's consent
Challenges	Challenges	Illegal mining Min title surveillance Good env practices Transparency	Institutional capacity Change the rules to improve cost-benefit balance	Communities trust Inst articulation Good env practices Actors communication	Institutional capacity Good env practices Social performance Communities' trust	A more informed CS To strengthen social movements	Transparency Good governance CS engagement

Abreviations	env	Environment
	min	Mining
	inf	Information
	inst	Institutions
	CS	Civil Society
	Ind	Industry
	btw	between

B. Document Analysis Matrix

This table presents the summary of the analysis of documents from the state that contain policies related with mining sector. Other documents like laws about specific topics were revised during the study, they are indicated during the result analysis.

	National Development Plan 2010-2014	National Development Mining Plan 2019	Promotion of the Mining Sector Policy	Mining Resources Administration Policy	Improvement of the productivity and competitiveness
Objective	More jobs Reduce Poverty Increase security	- Increase the number of clients (companies) - Higher income for the state due to the increase of mining - Improve institutional capacity to serve the clients	To add value attracting more investors, large companies, junior companies and small scale companies	Improve the administrative process	Increase of the traditional mining production Increase the participation of non-coal mining products Improve the social results (employment, occupational health, income for miners)
Goals	Goals about Mining: Increase coal production Increase gold production Improve Geological knowledge Reduce times to award mining titles Supervise concessions Reduce accidents	Increase coal production Increase precious ore production. To be main destinations for investment Enlarging the exploration area. Optimizing mining contracting processes. Improved knowledge subsoil Productivity and competitiveness in mining districts Increasing production in community mining	- Number of Investors - Increase of the direct investment in the sector		
Mining Closure	Formulate plan for mining legacies				
Poverty	Strategy for poverty reduction - Economic Growth (including mining) - Health Insurance System - Social program for extreme poverty				
Local Development	Focused on Local development Distribution of royalties.	Promoting Mining at local level: - Investment and productive employment, within a sustainable development framework. - Innovation and technological development. - The integration of policies and actions dealing with regional, national, and international infrastructure and connectivity.			Policy oriented to promote small scale mining
Small Scale Mining		Increasing production in community mining developments Agenda for the Modernization of Traditional Mining		Illegal mining	Policy oriented to promote small scale mining
Environment	Established as a priority To guarantee the restoration and maintenance of the natural capital and ecological services to support the economic growth			Illegal mining produces env. Damage	Minimize env. Impact.
Sustainable Development	Strengthening of mining institutions for SD -Institutional reform - Competitive, responsible and productive mining - Improve information	Lines for promotions of sustainable development in mining -Agenda for the Modernization of Traditional Mining -Basic Exploration of the National Territory -Competitive Mining Districts			
Royalties	Reform for a better distribution of the royalties	- Improve royalties collection and distribution process - Training the people at local level to manage royalties collection - Assistance to local governments in the collection process - Regional governments supervision and control of the distribution			

C. Quotations for the Analysis

Understanding of sustainable development and mining

It is the application of the best environmental practices and the development of technologies every time cleaner that the mining sector incorporates.

Industry - Association

[...]mining is an activity that takes what nature took millions of years to produce, it is extracted in hundreds or tens of years, then these extraction rates are quite polluting

Civil Society - Consultant

Mining sector is a driver and it is going to be a driver in a large extend of the economy of the country. Definitely, we have to do it with all the responsibility and sustainability we consider.

Government –Mining

...we generate jobs, qualified jobs, and very well paid jobs, we are the sector that pays the best to the workers that are in the chain...

Industry - Association

It is a social, environmental and economic toxic activity, it is spread around the world. The health of our people and of our children. Why would we risk to lose our traditional knowledge of our rural, indigenous and afro communities? For money? It is for money we are going to risk, it is for money we are going to allow them to damage our mountains, our ecosystem, our people, is it for money? And if it is for money, how much money is it? And the answer is also there negative.

Civil Society – Consultant

We think that this is a single world, that this a single country, and if I impact an ecosystem, those damages I can't minimize there, I can compensate them in other ecosystem, recovering an environmental liability, or improving an ecosystem that doesn't necessarily have to be the same.

Industry - Association

Policy framework

Promotion issues, excellent [...] and the mechanisms to promote it have been given, for imports of machinery, equipment, taxes; but the on the other hand about control, monitoring, tracking, nothing is done, reforms aren't made or designs or institutional measures, so very good in the promotion.

Government –Environment

I don't think a policy without technical and legal support deserves to be called policy, so if we go a little further up, from the mining point of view, to think really in a policy, so where is the documentation that allow anyone here to get coal titles and to mine coal in any way

Civil Society – Consultant

We have a boom of mining with few controls, without rigorous controls.

Government – Environment

So there's still a shock. I think, policy has to combine both types, the development policy based on mining, and environmental policy that is being used, that is what should be done, to have more common points

Industry - Foreign Company

We think that the institutional disarticulation in causing that in certain areas conflicts are generated around mining, they shouldn't happen, there should be a mining sector with compromise and articulated not only with the environmental sector.

Industry - Association

Institutional capacity

We need very strong institutions, environmental, especially, strong but technical, very professional entities and with very objective and scientific criteria.

Industry - Association

The institutional capacity is going through a critical or has passed through a critical moment. You look at the number of titles, about eight thousand, nine thousand titles, they have and see that the institutional capacity, there isn't the institutional capacity to go to control those eight thousand, nine thousand titles.

Government –Mining

So Far we have seen some institutional changes at national level, but we are still waiting the revision of law that regulate the autonomous Regional Corporations (Regional Environmental Authorities), we are still in a very central level.

Civil Society – NGO

Access to Information

When it is said, that in the Páramos mining is forbidden, that we think is that there is an authority that tell us where the Páramo starts and where it finishes, but with a scale of 1 to 250.000, there is a difference of 2.5 km, which is impossible.

Industry - Association

Seeing mining as a risk, the first thing I say is that if I have a risk I should have much information about that risk, I have to have much knowledge about this risk in order to predict the risk.

Civil Society – NGO

Royalties and taxes

The economic issue is that definitely drivers this process with the payment of the royalties

Government –Mining

I believe the first thing is the change in the game rules, in order to get a not very negative cost benefit balance, that it has higher royalties. For instance, the gold issue, we are paying royalties of 4%, it was fifteen years ago when the gold prices were not high. If the game rules are changed for progressive ones, when the price increases also the royalty increases, that's a political decision.

Government –Environment

Their responsibility (mining companies') is to pay the royalties and that's all, because it is something that the government demands, something different is the management that is given to those royalties, but that is not related with the mining sector.

Government –Mining

Transparency

To make mining business openly to the society, to the country, for the benefit of it not close and hidden business as many people say they are.

Government – Mining

How much royalties they pays depends on how much they report, how much is for the environment, for health [...] so this is about principles, basically in the miners,

Government –Environment

Socio Economic Local Development

In the areas where the highest importance activities are developed, we are talking about center and the south of El Cesar, center and south of La Guajira, in the case of coal; in the case of Gold in El Chocó, Bajo Cauca Antioqueño, etcetera; those areas are in the same way where the highest indexes of unsatisfied basic necessities are presented, deficit in basic public utilities like aqueduct, sewer system, and deficit in basic services like health and education

Government –Environment

When we talk about productive linkages that topic is even better, because mining in Colombia, and that's the policy indicator, Colombia mining country, it to double coal and to quadruple gold, and someone has to tell me if in coal and gold there are productive linkages, so mining strategy is really only two elements which don't have productive linkages, coal and gold they are 75-80% of the mining strategy.

Civil Society – Consultant

Coming back to CSR, the companies, the responsible companies, that obviously all we have to be responsible and all the companies that come to here and are in this activity, they generate some programs to help local communities, [...] for example Cerro Matoso is an example with the foundation it has, the foundation San Isidro, at world level in CSR, you go to Monte Liebano and there Cerro Matoso has the best schools, it gives them to the community.

Government –Mining

If they continue thinking they are alone in this world, they are going to find conflict, conflicts and conflicts. Furthermore, increasing conflicts, mining is characterized because it articulates conflicts, it fueled them.

Civil Society – Consultant

Stakeholders' participation and responsibility

Conflicting, mainly between the first two with the third, the operator, the executor, the institutional versus community

Government – Environment

Their first responsibility is to obey the law, to respect the law, that isn't optional, that is, to obey the law. I say this because in corporate social responsibility issues, that is like the last boom around which there is a whole advertisement issue, marketing and cosmetic about firm's activities, it begins saying we obey the law, that is good, but it would be the floor of their responsibility assessment

Government –Environment

self-reflection, self-analysis made by either an individual or a company, in the sense that you have already an obligation and become aware that you have a duty to protect the environment, to that extent you don't need specifically that someone is remaining you that you have to do a good job or environmental performance, you assume as your own, you assume it as your own principle.

Industry - Foreign Company

Conflict relation, it is incredible and unexpected that there is still a clash between the Ministry of the Environment and the Ministry of Mines and Energy

Civil Society – Consultant

When it is said, that in the Páramos mining is forbidden, that we think is that there is an authority that tell us where the Páramo starts and where it finishes, but with a scale of 1 to 250.000, there is a difference of 2.5 km, which is impossible.

Industry - Association

If it is said that I can't mine in the Páramo or in a natural park, is basic, [...] it is not to take advantage of whether the Páramo is delimited in the right scale or not.. No! [...] If I see that there is a seam, a soil, a climate, this is like a Páramo, here we can't mine.

Government –Environment

Communities trust and image

I believe the main challenge is to get the communities' trust, trust that was lost, nobody knows when in the last three years. Three years ago we were a sector that didn't generate necessarily conflict.

Industry - Association

It is needed to achieve that people and the public institutions lose the distrust they have about mining projects, because they generate a lot of distrust.

Industry - Foreign Company

Environmental performance

It is the application of the best environmental practices and the development of technologies every time cleaner that the mining sector incorporates.

Industry - Association

That a foreign company comes to leave some money and this means that your water will be polluted forever, I think what is there is an ethical imperative that united the different layers of the society in resistance

Civil Society – Consultant

When someone are talking about mining, is talking about natural resources that compete with other resources. When someone is talking about mining obviously is talking about water.

Civil Society – NGO

How is it possible that you expect in a tropical country, where it rains a lot, mining and in this case open-pit mining, it can bring something good, so the image we have is acid waters, heavy metals in high density populated areas and we consider the Colombian particularities, and Colombia is absolutely particular in the Andean zone in terms of biodiversity, nowhere else in the world is so biodiversity.

Civil Society – Consultant

I really think that in Colombia the idea of a negative environmental impact has been sold, and it has been the battle horse¹⁷ for many environmentalists that really don't know what the magnitude of what can happen in a mining project is. Nobody can deny that effectively some environmental effects could happen, but you can prevent some of them, mitigate or control them and others will have to be compensated because they are irreversible.

Industry - Foreign Company

The anti mining people and the extremist environmentalists many times show that mining is disastrous, but they don't do it with social and environmental technical criteria. You can't say definitely they are right or not, that's a very sectarian thing, very oriented that the thing is bad definitely bad and when you ask why it is so bad, there isn't a logic answer, so that disinformation is something that...

Government –Mining

We don't have to document because we don't have the burden of proof, those who are going to harm the environment have the burden of proof, that is the law in Colombia. Despite of that we are those who have the proofs, we are who have the data, we are, those who have serious discrepancies with this model, documenting and the miners never answer us technically and never answer us with arguments.

Civil Society – Consultant

if there is conflict about land property, if you are going to pollute the water, if you are going to harm the soil, then the conflict about property is the most complicated, if you have land and someone comes because the underground was given to him by the state, then there will be conflict, and there will be conflict for water contamination, and there will be conflict because additionally they destroy the local economies, the you have conflicts around mining, all kind you want.

Civil Society – Consultant

Mine Closure

That is something that we have to start looking at and we have to start considering, the mine closure should be done in a responsible way. The other issue is the labor reconversion, that's also something we have to start looking at, when definitely the reserves have run out, we have to see what processes we have to do in order to avoid the economy of the municipality [...] falls and on the contrary it can be sustained.

Government – Mining

¹⁷ Battle horse: literal translation from Spanish of the expression Caballo de Batalla. In this context means the negative environmental impact image of mining is the main justification and argument that environmentalists use against mining, instead of technical or scientific support.

Regarding cost-benefit, when all the variables are not taking into account in the benefits and the costs we talk about the contributions, foreign investment, jobs, human capital due to the training, but if we at the same time start to take into account the life quality deterioration, effects on public health, water quality loss, migrations [...] so that kind of assessments don't consider those variables.

Government – Environment

Illegal Mining

Colombia is going to change from to be exclusively a drugs trafficking country to be a country with new violence outbreaks not only because of drugs trafficking but also because of the conflicts of mining. [...]. This is only the new money laundry of the guerrilla and drug dealers.

Civil Society – NGO

One (challenge) is to eradicate illegal mining, it has damaged the sector, the country and obviously the environment,

Government – Mining