The formalization of artisanal and small-scale gold mining in Colombia and its contribution to the Sustainable Development Goals

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September 2017

Dissertation submitted in partial fulfilment of the requirements for the MSc in Sustainable Development for Distance Learning Students of the University of London, Centre for Development, Environment and Policy (CeDEP), School of Oriental and African Studies (SOAS)
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Dissertation word count: 9,939
Word count of excluded elements: 4,348
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Abstract

Artisanal and small-scale mining (ASM) has been a livelihood option for many Colombians throughout centuries. It is often the only income opportunity in remote regions and a driver of local economies. The public opinion of the sector is poor as the sector is associated with illegality, social conflict and environmental destruction.

International experience shows that ASM has the potential to be a driver of economic and social development and a strategy for poverty eradication in developing countries. Informality has been identified as one of the main barriers to unfold this potential. As a result, the Colombian government started a formalization initiative to create a competitive sector that generates development, social equity and wellbeing, reduces poverty and fairly distributes resources.

This research investigates if the inclusion of artisanal and small-scale miners into the formal economy improves the economic, social and environmental performance of the sector to positively contribute to sustainable development.

The results show that the published formalization policy is a valuable tool to improve the economic, social and environmental impact of ASM. Still, the implementation of formalization has been weak and there has been no evidence of positive change on a noteworthy scale. Main barriers are a weak and instable legal and political system, a non-existent territorial order and conflict in mining regions.

The creation of a favourable environment is a precondition for formalization to unfold its potential and transform ASM into a positive contributor to sustainable development.
Acknowledgements

A big thank you to my colleagues from the Alliance for Responsible Mining who provided me with their knowledge and the contacts of key experts.

Thank you Diego Torres Joya for your support, patience and love throughout the process.
1. Introduction

In September 2015, the international agenda for Sustainable Development was published. 17 Sustainable Development Goals were defined to guide nations on their path towards eradicating poverty and achieving “sustainable development in its three dimensions — economic, social and environmental— in a balanced and integrated manner” until 2030 (United Nations 2015, p.1).

Colombia has been highlighted as a positive example of early incorporating the Sustainable Development Goals into its national policy (Lucci et al. 2015, p.3). The mining and energy sector was designated as one of the engines of Colombia’s development (Departamento Nacional de Planeación 2013, p.140). The National Development Plan claims that the sector will play a key role in driving inclusive and sustained economic growth and will be important for job creation, thereby directly contributing to poverty reduction (Departamento Nacional de Planeación 2013, p.113).

Mining has a long history in Colombia, and especially artisanal and small-scale mining (ASM) has been a livelihood opportunity for many Colombians since colonial times (Ministerio de Minas y Energía 2012, pp.6–14). Today, approximately 72% of mining is ASM (Ministerio de Minas y Energía 2012, pp.6–14) and it is often the only livelihood option in rural communities due to the lack of alternative economic opportunities (Güiza & Aristizábal 2013, p.33). Therefore ASM is considered as a potential driver of poverty eradication in rural areas (Defensoría del Pueblo 2010, p.11). Nevertheless, it has a poor public image as it often causes negative impacts on miners, communities and the environment (GDIAM 2016, p.10).

A frequently mentioned cause of the issues in ASM is the informality of the sector, which is around 87% (Ministerio de Minas y Energía 2012, p.14). The lack of formalisation hampers social development of miners and their communities as well as environmental protection (Hentschel et al. 2003, p.9).

The Colombian government set itself the aim to formalize the sector by publishing the “National Policy to formalize the Colombian Mining Sector” in 2014 and establishing a formalization program for small-scale miners. This shall result in a competitive sector which generates development, social equity and wellbeing, culminating in reduced poverty levels and a fair distribution of resources (Ministerio de Minas y Energía 2014, p.6; 34; 52).
This dissertation analyses if the inclusion of artisanal and small-scale miners into the formal economy improves the economic, social and environmental performance of the sector to be able to positively contribute to achieving the Sustainable Development Goals in Colombia. This is investigated by analysing the alignment of the formalization policy with sustainable development objectives, evaluating the ability of miners to comply with its requirements and identifying if the implementation of the formalization program already has shown positive results.

A mixed-method qualitative research is applied, including a document analysis, expert interviews and a focus group. The results show that the formalization policy is a valid tool to improve the economic, social and environmental performance of the sector and contribute to each one of the Sustainable Development Goals. Still, the implementation of the policy has been weak and necessary preconditions are missing to be able to formalize the sector. Currently, ASM is a negative contributor to sustainable development.

The results of the research shall inform public entities, NGOs, policy influencers, universities, civil society and other stakeholders in the field on the progress of formalization of ASM in Colombia and provide insight on its challenges and potential. It can contribute to the design or improvement of strategies and programs to empower the ASM sector and transform it into a driver of sustainable development.
2. Literature Review

2.1 The Sustainable Development Goals

The “Report of the World Commission on Environment and Development: Our Common Future” from 1987 provided the most popular definition of sustainable development, where it is defined as development that “ensure[s] that it meets the needs of the present without compromising the ability of future generations to meet their own needs.” Our Common Future aimed at setting an international agenda for change to end with the most pressing global issues: poverty and environmental degradation. The report called for economic growth that is socially and environmentally sustainable, thereby defining the three dimensions of sustainable development: economic, social and environmental development (World Commission on Environment and Development 1987, p.16).

Based on this, the Millennium Development Goals from 2000-2015 were formulated, which was the first international framework for sustainable development, with eight global goals that should guide development on a more sustainable and inclusive path. There was progress, but the distribution of the benefits has been uneven, as they didn’t reach the most vulnerable people. In September 2015, the new international agenda for Sustainable Development was published: The 17 Sustainable Development Goals, the pathway of nations for the next 15 years to eradicate poverty and achieve “sustainable development in its three dimensions — economic, social and environmental— in a balanced and integrated manner” (United Nations 2015, p.3).

Figure 1 Sustainable Development Goals

![Sustainable Development Goals](United Nations 2017)
2.2 Artisanal and small-scale mining globally

No globally accepted definition of ASM exists, but authors agree on certain characteristics that comprise this type of mining:

- basic extraction and processing tools,
- exploitation of small deposits,
- labour-intensive with low productivity,
- low standards of safety and health,
- lack of capital, access to markets and support services,

ASM sometimes is the only income opportunity in remote rural areas and often poverty-driven (Hentschel et al. 2003, p.27). In contrast to other small-scale, rural and poverty-driven activities such as agriculture, the ASM sector has been continuously underfunded and neglected by international development and government programmes (Buxton 2013, p.1). One reason for the lack of engagement with ASM are the negative social and environmental impacts it is associated with, such as: environmental damage, irresponsible mercury use, financing of conflicts and other illicit activities, social disruption, child labour, amongst others (MMSD Project 2002, p.314). The environmental and socio-economic impacts are broadly documented, whereas the underlying structural challenges are poorly understood and approached:

- weak legislation, policies and implementation;
- government marginalisation or repression;
- cultural marginalisation and exclusion of certain demographic groups;
- low barriers to entry into informal or illegal ASM with its poor social and environmental protections;
- lack of legal protection for land and resource rights;
- poverty-driven, short-term decision making;
- uncontrolled migration;
- poor access to financial services, market information, technology and geological data;
- political exclusion;
- lack of data on individuals and communities;
- reliance on mining in vulnerable communities (Buxton 2013, p.7).

Buxton (ibid) claims that ASM needs to be understood locally to tackle these issues, as they vary between regions and contexts.
2.3 Artisanal and small-scale mining and sustainable development

Despite the challenges, ASM’s potential to drive local economic development and reduce poverty has been recognized in the international development sector. The RESPOMIN network developed a vision of responsible artisanal and small-scale gold mining, aligned with the Millennium Development Goals:

“ASM is a formalized, organized and profitable activity that is technologically efficient and socially and environmentally responsible; the sector’s development takes place within a framework of good governance, legality, participation and respect for diversity; it seeks to make an increasing contribution to decent work, local development, poverty reduction and social peace within our countries […].” (Echavarria 2008, pp.12–14).

This vision is based on principles in line with the Sustainable Development Goals (Echavarria 2008, pp.16–42):

- Respect for human rights;
- Decent work;
- Quality of life and sustainable development;
- Legalisation;
- Gender equality;
- Multiculturalism;
- Environmental protection.

2.4 The origins of artisanal and small-scale gold mining in Colombia

Mining, especially gold mining, has a long history in Colombia, reaching back to the fifth century BC when indigenous people became expert goldsmiths. During the Spanish colonisation period from the sixteenth to the nineteenth century, gold extraction was the principal economic activity which shaped the political and social order and the relationship between the native communities and the colonizers. The working force in gold extraction was mainly composed of indigenous people and later reinforced by African slaves, and benefits were exclusively reaped by the colonizers (Álvarez 2016, pp.33–35). The subordinated groups resisted either through public confrontation and revolts or through the development of practices, rituals and habits that formed the basis of alternative livelihoods. Álvarez argues that this kind of resistance is the historical expression of small-scale mining in Colombia. “Folk Mining”
was undertaken outside of the colonial order in remote regions with difficult access and armed protection frontiers, where the groups established alternative social systems. Gold panning became one of the most important economic activities in these regions (Álvarez 2016, pp.43–45).

In the eighteenth and early nineteenth century, after the disappearance of the colonial authorities, mining activities significantly decreased, but small-scale alluvial mining continued, which reflects the dependence of these communities on mining as a means of subsistence (Álvarez 2016, p.49).

In the late nineteenth and the beginning of the twentieth century, large-scale mining, foreign investment and industrialization were promoted to consolidate the political and economic project of the country.(Álvarez 2016, p.50). ASM continued to play a role in remote rural areas, but was regarded as an inefficient and marginal pre-modern activity to disappear with modernization. It didn’t disappear, but continued expanding at the margins of legality (Álvarez 2016, pp.52–54).

The second half of the twentieth century was determined by social conflict, and people in rural areas were especially vulnerable. Apart from the violence that affected rural populations, the expansion of large-scale mining frequently caused displacement of communities to clear mining areas, while their property rights were ignored. This reinforced the fracture between large and small-scale mining and the marginalization of artisanal miners (Álvarez 2016, p.54).

At the end of the twentieth and the beginning of the twenty-first century, the promotion of large-scale mining continued, as well as the confrontation of interests over mining resources. The Colombian State paid more attention to ASM and its impact on society and the environment. The involvement of illegal armed groups in mining intensified the complex situation even more. They reinforced displacement of local inhabitants in traditional mining areas, started illegal mining in new areas and applied irresponsible mining practices, using economic gains to finance their criminal activities. This contributed to a further criminalization of the activity which has served as an important livelihood opportunity for many Colombians throughout history (Álvarez 2016, p.59).

Álvarez (2016, p.59) concludes his study with the following words:
“The historical nature of the diverse forms of extraction has been abandoned for more simple explanations that reduce the activities to legal and illegal ones and therefore the intervention of the state is also simplify to the options formalization (follow the formal system) or criminalization, as the two policies controlling the involvement of the official legal system in the mining sector. The simplification offered by the reduction of most of the mining activities that are not performed in a large-scale fashion and under a mining title to the category of illegal is an ahistorical legal categorization that is also an inaccurate description of the complexity happening on the ground.”

2.5 Contemporary artisanal and small-scale gold mining

2.5.1 Classification of artisanal and small-scale gold mining
Artisanal and small-scale gold mining still plays an important role for many Colombians, but there are no reliable numbers regarding the quantity of people engaged in this activity, due to its informality. The Mine Census of 2010 identified 14,357 mining organizations in total, of which 4,133 were gold mining organizations, while it must be taken into account that 8 out of 31 mining departments were not included in the Census. Approximately 72% of mining in Colombia is done by small-scale mines (Ministerio de Minas y Energía 2012, pp.6–18). By September 2017, 80,117 gold panners (“barequeros”) were registered in the RUCOM system (Agencia Nacional de Minería 2017). The decree 276 which stipulates the registration of gold panners was published in February 2015 and there are still many people who are not registered.

Lacking a classification of mining in Colombia, the Ministry of Mines and Energy introduced one in October 2016 which differs between subsistence, small-, middle-, and large-scale mining (Ministerio de Minas y Energía 2016a, p.2). Subsistence mining can be used synonymously with artisanal mining and represents people who recollect mine material from sand or rivers without any machinery. They don’t need a mining title but must subscribe to the RUCOM system which registers all mineral traders in the country (Ministerio de Minas y Energía 2015, p.4). The maximum production volume for subsistence miners are 420 grams of gold annually (Ministerio de Minas y Energía 2017, p.2). Small-scale gold mining distinguishes itself from other mining types through the maximum allowed annual production volume (Ministerio de Minas y Energía 2016a, p.3).
2.5.2 Challenges of artisanal and small-scale gold mining

Artisanal and small-scale gold mining has profound social and historical origins and makes part of the culture of Colombian mining communities, therefore it is considered as a potential driver of poverty eradication in rural areas (Defensoría del Pueblo 2010, p.11). In rural Colombia poverty is still widespread: whereas 26.9% of urban people are poor, this is true for 42.8% of the residents of rural areas (Departamento Nacional de Planeación 2013, p.57). The average poverty rate in mining districts is reported to be even higher at approximately 74% (Hernán & Pantoja 2016, p.150). Mining sometimes is the only livelihood opportunity in rural communities due to the lack of alternative economic opportunities (Güiza & Aristizábal 2013, p.33). The political and academic sector lack knowledge and facts about the real social and economic importance of ASM (Hernán & Pantoja 2016, p.148).

Social challenges

Mining communities generally provide modest to precarious conditions regarding education, housing, sanitation, health and public services as they often developed in remote regions without a territorial order. These communities are vulnerable to violence and social conflict as drug networks or illegal armed groups settle in these regions (Hernán & Pantoja 2016, pp.149–150), mining by themselves or extorting artisanal miners (Massé & Munevar 2016, p.120).

Artisanal miners often are exposed to precarious security and hygiene conditions which results in elevated indices of illnesses and deaths (Granados 2015, p.16). This doesn’t just impact the vulnerability and quality of life of the miners but also negatively affects the families they support (Cárdenas et al. 2017, p.54). The Mining Census of 2010 showed that 72% of the characterized mining organizations don’t implement any security, hygiene or occupational health measures (Ministerio de Minas y Energía 2012, p.22).

When artisanal miners settle in regions of native communities, social conflict is common (Hernán & Pantoja 2016, p.150). Many artisanal and small-scale miners have been driven into illegality when the government granted mining concessions to large-scale investors over areas where ASM was traditionally performed. This led to social conflict, displacements, massacres and intimidation (CINEP 2012, p.16).
Economic challenges

Artisanal mining often doesn’t generate surplus for the miners to guarantee a sustainable production. Miners lack financial, technical and administrative knowledge. This drives them into a complex dependency of their intermediaries which are their only source of credit and take advantage of them (Hernán & Pantoja 2016, p.150).

Environmental challenges

Production processes and technology are ineffective and have a direct negative impact on human health and the environment. Irresponsible use of toxic chemicals, explosives and waste affect the health of miners and community members and deteriorate water sources, soil and air quality. Environmental destruction and contamination result in a significant degradation of ecosystems (Hernán & Pantoja 2016, pp.152–153). Colombia is the world’s highest per capita mercury polluter and artisanal gold mining is the main user of this toxic chemical (Cordy et al. 2011, p.155).

2.5.3 The informality of artisanal and small-scale mining

A frequently mentioned cause of the problems related to ASM is the informality of the sector. The mining census found that around 87% of gold mining is informal (Ministerio de Minas y Energía 2012, p.14). Formal mining is defined as an activity performed under a legal title which complies with technical, economic, labour and social requirements (Ministerio de Minas y Energía 2014, p.42).

Güiza (2013, p.116) states that formalization is the biggest challenge to manage the negative social and environmental effects and benefit communities, as well as the State. Echavarria (2014, p.14) agrees that the informality of the sector deprives the State of important resources and the poor conditions prevent it from driving social development and improving life quality in mining communities. The Ministry of Mines names the following key barriers to formalization (Ministerio de Minas y Energía 2014, p.72):

- Weak management, administration and interinstitutional articulation;
- Delay in legalization processes;
- Absence of relevant, reliable and timely information;
- High entry barriers;
- Subsistence activity with low surpluses;
- Low levels of technology, innovation and knowledge;
Deep-rooted customs of informality;
Weak infrastructure of mining areas;
Lack of:
  - legal security and clear norms;
  - application of special norms for ethnic communities;
  - incentives to stimulate formalization;
  - associative schemes which represent the sector;
  - economic resources and access to credit.

2.5.4 The formalization of artisanal and small-scale mining

As a result of these challenges, the government has been reinventing the mining institutions and restructuring the sector to improve its governance, management and administration (Ministerio de Minas y Energía 2014, p.6,34). The Formalization Department was established within the Mine Ministry and the “National Policy to formalize mining in Colombia” (Formalization Policy) was published in July 2014 to end with the informality of the sector. Its vision is the following:

“In 2019, artisanal and small-scale mining in Colombia shall be a formalized industry by 40% in legal, technical, environmental, economic, tributary, social and labour aspects, through the support of the State by means of programs, projects and strategies. The formalisation of mining activities will make the sector more competitive, generating development and social equity.”

The aim is to reach full formalisation by 2032 (Ministerio de Minas y Energía 2014, p.52). The Formalisation Policy includes a progressive approach with three levels: from basic compliance to formal mining to advanced formalization, where the latter should lead to competitiveness, wellbeing and development (Ministerio de Minas y Energía 2014, p.43). The three levels include progressive technical, environmental, social, labour and economic requirements (Ministerio de Minas y Energía 2014, p.45).

The Ministry established a formalization program with three possible strategies for miners:
Subsistence miners don’t need to comply with formalization requirements. The support activities provided by the government will focus on legality, security and environmental sustainability. Social programs to improve living conditions shall support this type of miners (Ministerio de Minas y Energía 2016b, p.31).

The first step of becoming formalized is to obtain legal mining rights. The possibilities to access legal rights are to obtain a mining title or have a subcontract with a mining title holder. To obtain a mining title, ASM organizations have the following possibilities:

- Obtain a concession contract;
- Obtain mining rights within a special reserve area;
- Return of already titled areas for the formalization of artisanal and small-scale miners (Ministerio de Minas y Energía 2014, pp.44–45).
Afro-Colombian and indigenous communities have special collective rights and can apply for a “mining zone for indigenous people or mining zones for black communities” (Agencia Nacional de Minería 2013, p.1).
3. Research Design and Methods

3.1 Research questions
Primary research question:

Does the inclusion of artisanal and small-scale miners into the formal economy improve the economic, social and environmental performance of the sector to be able to positively contribute to sustainable development in Colombia?

Sub-Questions:

1) Is the formalization policy aligned with the concept of sustainable development by including performance requirements for artisanal and small-scale mining that target at the improvement of their economic, social and environmental practices?
2) Are artisanal and small-scale miners able to comply with the requirements of the formalization policy?
3) Has the implementation of the formalization policy proven successful to date by driving positive change in economic, social and environmental practices?

3.2 Research methods
This research applies a qualitative research design. The characteristics of qualitative research are its preference for words rather than numbers, the generation of theory through research, the examination of different interpretations participants have of the social world and the position that social properties are the result of interactions between individuals (Bryman 2012, p.380). The main methods in qualitative research include participant observation, qualitative interviewing, focus groups, language-based approaches to data collection and the collection and qualitative analysis of texts and documents. In multi-method approaches two or more of these methods are applied which allows triangulation, the application of more than one method, to cross-check findings (Bryman 2012, p.383; 392). Triangulation helps to corroborate research results and reduce potential biases (Bowen 1997, p.28).

This research applies a qualitative multi-method approach. To answer the first sub-question, the researcher conducted a Qualitative Document Analysis to analyse the
Formalization Policy in detail. This method is used in political science to systematically analyze the content of documents such as policies (Wach et al. 2013, p.1). The researcher made use of two further qualitative methods: focus groups and expert interviews.

A focus group is an interview with a group of people who discuss a specific topic in depth to construct meaning together by building on each other’s view (Bryman 2012, p.502). Five representatives of legal small-scale mining organizations in the formalization process participated in the focus group. The participant list can be found in Appendix 1.

Semi-structured interviews are a flexible interview process that don’t follow a strict guide but include the main topics to be covered in the interview, whereby a coherence of topics and questions in all the interviews is necessary (Bryman 2012, pp.470–471). Eight interviews were conducted with ASM and formalization experts in Colombia, who were chosen due to their specific knowledge and experience on these topics. This is a purposive sampling method where the sample units are chosen strategically because of their relevance to the research questions (Bryman 2012, p.418). This kind of sampling was necessary as the circle of people with knowledge on formalization of ASM in Colombia is limited. A list of the interviewees can be found in Appendix 2.

The contacts have been identified through the Alliance for Responsible Mining, a Colombian non-governmental organization and global leader on ASM which developed the first global standard for responsible artisanal and small-scale mining and which implements formalization projects in Colombia (Alliance for Responsible Mining 2017). The researcher has been a consultant of this organization for more than three years at the time of conducting the research.

3.3 Data collection
The interviews and focus groups were done face-to-face by the researcher. The first part of the expert interviews included a guide with key questions on the formalization policy, its strengths and weaknesses, its implementation and related challenges. The interview guide can be found in Appendix 3. The second part focused on building the bridge between ASM, formalization and the 17 Sustainable Development Goals by allocating points for three specific questions. The table including the questions can be
found in Appendix 4. After allocating the points, the interviewees were asked to give a short explanation of their choice. The focus group focused on the second research question to learn about the ability and challenges of ASM to comply with formalization requirements. The interviews and focus group were conducted in Spanish and audiotaped, then transcribed and translated into English.

3.4 Data analysis
To start with the document analysis, the topics to identify were defined. The 17 Sustainable Development Goals and their indicators that may be relevant for the ASM sector were chosen as the relevant topics. The document was reviewed in detail to analyse if the policy addresses the topics. The identified text was highlighted, coded, copied into a table and interpreted.

The data obtained from the interviews was analysed through a thematic analysis, a common approach in qualitative data analysis. A matrix-framework was used to identify recurring themes and subthemes within the different data sets (Bryman 2012, p.579).

<table>
<thead>
<tr>
<th>Table 1 Key stages in the Framework data analysis</th>
</tr>
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<tbody>
<tr>
<td><strong>Familiarization</strong></td>
</tr>
<tr>
<td><strong>Identify thematic framework</strong></td>
</tr>
<tr>
<td><strong>Indexing</strong></td>
</tr>
<tr>
<td><strong>Charting</strong></td>
</tr>
<tr>
<td><strong>Mapping and interpretation</strong></td>
</tr>
</tbody>
</table>

Adapted from: (Ritchie & Spencer 2002, pp.12–21)

3.5 Methodological weakness
Due to time limitations and logistic difficulties no subsistence miners or miners without a legal mining title could be interviewed, which make up a significant proportion of miners in Colombia. The experts had sufficient knowledge on these groups of people to include ideas on their formalization challenges, still – from a statistical point of view - no representative sample was drawn, which makes generalization of the findings
difficult. Furthermore, not all opinions and observations could be included in the analysis, although they may be worth being taken into account. This is a typical weakness of qualitative research, where the interpretations of findings are influenced by the researcher (Bryman 2012, p.405). For the second part of the expert interview a higher sample would have been desired to improve the reliability of the data.
4. Results

4.1 The formalization objective
All interviewees agreed that the objective of formalizing 40% of the mining sector until 2019 is significant and very ambitious, and most respondents believe that it will not be achieved. The Ministry of Mines hasn't defined a method yet how to measure this objective and a realistic baseline is missing as the Mining Census of 2010 didn't include all the mining departments and is already outdated.

4.2 Strengths of the formalization policy
The overall feedback on the formalization policy was positive. Various interviewees pointed out that it has a good understanding of what is needed to become formalized and has a great potential to improve the performance of the sector. It includes a good problem analysis, is well-thought, well-constructed and with a robust logic. The stepwise approach was highlighted positively.

The special reserve areas and formalization subcontracts have been appreciated, as these are new possibilities for miners to work under a legal title.

4.3 Weaknesses of the formalization policy
The requirements of the policy are extremely demanding and the same for small- and large-scale mining. Experts and miners agree that the classification of miners should result in a differential treatment of different scales which considers particular capacities and realities of small and large-scale miners.

4.4 Success in implementation
Progress depends on the region. Higher standards can be identified in regions where decision-making is decentralized and responsibilities are delegated from the national to the departmental governments (for example Antioquia), or where the local government has been supporting the small-scale mining sector (Nariño and Huila). The support of international cooperation has shown positive results as well.
The miners feel the pressure of the State to regulate the activity and people have been working towards compliance out of fear of sanctions.

The territorial characterization of small-scale mining is important to provide information and documentation on the realities of the regions.

The cooperation with the educational institution SENA has been highlighted positively due to its experience and integral focus.

4.5 Challenges of formalization

**Lack of legal access**

60% of mining in Colombia is done without a mining title, in gold mining the numbers are even higher at 87%, therefore one of the biggest challenges is passing miners from illegality to legality. But there are hardly any regions available without mining titles, due to a weak legal system and land planning. The national government has been handing out mining titles with little coordination with local governments, which results in conflict between the new title holders and those miners who have already been working there, many for generations. This happened for example in Bajo Cauca, el Bagre and Zaragoza, municipalities whose economies depend 80% on mining but where all miners are illegal because the mining title belongs to one large-scale mining company.

The formalization policy included a mining title option for traditional miners who can prove ancestry in the region, but this decree was declared invalid by the Constitutional Court in 2016 and more than 7,000 pending applications were suspended. These miners are in a legal limbo and haven’t been provided with a solution until today.

**Normative instability**

The mining sector in Colombia operates in an unstable legal framework due to the Mine Code from 2001 which doesn’t reflect the reality of the sector and becomes more and more obsolete as articles are being declared invalid or unattainable by the courts. This creates many legal gaps. The policy may be a valuable tool but can’t unfold its potential in an unstable legal framework.
Legal instability poses huge problems for miners to comply with the requirements. Laws and decrees are being published, changed and abolished constantly, without consulting or informing the miners. This creates distrust and discontent.

**Political will**

It sometimes seems that the government has a double discourse. Although the Ministry has good intentions to support small-scale mining, some experts think that it isn’t backed up by the government.

The high-level discourse is that mining isn’t for everyone and only should be performed by those who have the resources to comply with the requirements. This discourse ignores the reality and tradition of mining in the country, an activity that has been the only income opportunity for many people for generations.

**Missing incentives**

Miners and experts agree that there is a lack of incentives to be formal and legal. The strongest incentive is to avoid persecution. There is no added value for formal miners, but 30-40% higher costs. Miners complain that the government applies norms that put the few legal miners in a competitive disadvantage with illegal miners. They are frustrated with the State’s slow progress in taking care of these inequalities.

**Weak progress and support**

The formalization requirements aren’t centralized or systematized. The miners have to consult with numerous entities to build the puzzle and get frustrated on half-way because of the bureaucracy and required amount of paperwork. Support for compliance hasn’t been sufficient, which is much needed due to low education levels or limited administrative and organizational capacities of miners. Complying with the requirements for formalization, even the basic ones, is a difficult task. The miners point out that it is practically impossible to maintain the level over time, as it is too costly and complex.

For the miners, a main weakness is the methodology of implementation, as a lot of time is spent on the characterization and gap analysis without any new learnings for the miners. They feel that they are over-diagnosed but not sufficiently supported to
overcome their shortcomings. Support staff doesn’t have sufficient knowledge or experience and a lack of knowledge on the specific regional conditions.

Support should be more constant and profound. Instead of a lot of visits by numerous people, permanent local staff with knowledge is needed which supports the miners on a frequent basis. Support staff gives many mines a little piece of advice, which is perceived as a waste of resources. The miners would prefer the money to be spent on improvements that are really needed by the communities. The implemented activities don’t add real value.

There are often conflicts between the authorities and the small-scale miners in the territories. There is a high pressure on the local authorities to fight illegal mining, and they do so by taking strict measures such as imprisoning small-scale miners and seizing machinery.

Inefficiency and lack of infrastructure
Administrative processes in public entities are inefficient. Receiving mining titles or environmental licenses may take up to 10 years because of unclear processes and a fear of public officials to make decisions. There is a lack of coordination between the different government entities and a lack of support by environmental authorities, who have other priorities and are resistant to support small-scale miners.

There is a lack of tools and financial and human resources to really push forward the policy. Decision-making and planning is centralized in Bogota where the things aren’t seen as they are. Processes should be speeded up, instead they are getting more and more complicated.

Conflict zones and absence of the State
In some mining regions basic needs aren’t satisfied and high levels of violence exist due to a historical structural discrimination by the State. Many mining territories are controlled by armed groups and criminal networks and full of illegal miners who aren’t interested in making improvements. Corruption and the intimidation of local governments is common. The government is absent in many of these conflict zones, which often coincide with gold mining regions.
**Subsistence miners**
There is a huge gap in the classification between subsistence and small-scale miners and the reality of subsistence miners isn’t considered within the legislation. The definition of subsistence mining limits them to alluvial mining and the use of manual tools, although many of them have started to use small machinery or mine underground. According to the law they become illegal in the moment of applying these practices.

The experts haven’t identified any mechanisms or activities that are implemented to support subsistence miners, which would be important because the accumulated impact of their activities can be very high.

**Formalization of ethnic minorities**
Indigenous minorities and afro-descendant mining communities can be found in mining departments such as Cauca, Choco or Nariño. The implementation of the policy has been difficult in parts of these territories as the government has had troubles in approaching these ethnic territories.

**Lack of financial access**
Although certain banks started to grant credits to small-scale miners, the prerequisites are extremely demanding and very few could access credits until now.

**Culture**
There is a culture of informality which is accepted in Colombia. Formalization means changing the whole cultural concept of how mining is done. The mining regions are culturally different and there is no one-size-fits-all solution.
4.6 The contribution of formalization to the Sustainable Development Goals

A detailed presentation of the results of the document analysis would go beyond the scope of this dissertation. To simplify the presentation of the results, the researcher allocated points from zero to five to determine the potential of contribution of the formalization policy to the Sustainable Development Goals, where zero represents no potential of contribution and five a high potential of contribution. The entire analysis can be found in Appendix 6.

Figure 3 Result chart document analysis

The policy has a high potential contribution to seven goals, a medium potential of contribution to eight goals and a low potential contribution to two goals.

The experts were asked to answer three questions and allocate points to shed light on the contribution of formalization to the Sustainable Development Goals by completing the table in Appendix 5. The three questions were:
1. **Relevance:** Is the Sustainable Development Goal relevant for the artisanal and small-scale gold mining sector in Colombia? Where zero means that it isn’t relevant and five means that it is very relevant.

2. **Theory:** What is the potential contribution of the formalization policy to each of the goals? Where zero means no potential contribution and five means high potential contribution.

3. **Practise:** Has the implementation of the formalization policy shown positive change to contribute to the goal? Where zero means that there hasn’t been any positive change and five means that there has been significant positive change.

Figures four to six show the results of the answers of six experts, as two experts didn’t have the time to finish the second part of the interview.

*Figure 4 Relevance of ASM for sustainable development*

<table>
<thead>
<tr>
<th>Sustainable Development Goals</th>
<th>Low relevance</th>
<th>Medium relevance</th>
<th>High relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: No Poverty</td>
<td></td>
<td></td>
<td>4.50</td>
</tr>
<tr>
<td>3: Good Health and Well-being</td>
<td></td>
<td></td>
<td>4.50</td>
</tr>
<tr>
<td>12: Responsible Consumption and Production</td>
<td></td>
<td></td>
<td>4.67</td>
</tr>
<tr>
<td>6: Clean Water and Sanitation</td>
<td></td>
<td></td>
<td>4.83</td>
</tr>
<tr>
<td>8: Decent Work and Economic Growth</td>
<td></td>
<td></td>
<td>4.83</td>
</tr>
</tbody>
</table>

Low relevance: 0-1.66; Medium relevance: 1.67-3.33; High relevance: 3.34-5
The first question revealed that ASM is highly relevant for twelve goals and medium relevant for five goals.

*Figure 5 The potential contribution of formalization to sustainable development*

<table>
<thead>
<tr>
<th>Sustainable Development Goals</th>
<th>Low Potential</th>
<th>Medium Potential</th>
<th>High Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>8: Decent Work and Economic Growth</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1: No Poverty</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>6: Clean Water and Sanitation</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3: Good Health and Well-being</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>17: Partnerships for the Goals</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>12: Responsible Consumption and Production</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>16: Peace, Justice and Strong Institutions</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2: Zero Hunger</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>10: Reduced Inequalities</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>15: Life on Land</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>4: Quality Education</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>9: Industry, Innovation and Infrastructure</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>13: Climate Action</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>5: Gender Equality</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>11: Sustainable Cities and Communities</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>7: Affordable and Clean Energy</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>14: Life Below Water</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Low potential contribution: 0-1,66; Medium potential contribution: 1,67-3,33; High potential contribution: 3,34-5

In the expert’s opinion, the policy has a high potential contribution to seven goals, a medium potential contribution to nine goals and a low potential contribution to one goal.
In the expert’s opinion, the policy has contributed on a medium scale to eleven goals and on a low scale to six goals. There has been no high contribution in any of the goals.

The following figure shows a summary of the results of the three questions, shedding light on the gaps that exist between relevance, theory and practise:
Apart from allocating points, the experts gave a short explanation of their choice to better understand their views. Table 2 summarizes the responses for each one of the goals.
### Table 2 Summary of expert opinions on ASM, formalization and the Sustainable Development Goals

#### GOAL 1
**No Poverty**

<table>
<thead>
<tr>
<th>Average weight</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Relevance</strong></td>
<td>4.5 ASM is a livelihood option for many who don’t have other opportunities. Poverty is high in mining communities and basic needs aren’t satisfied.</td>
</tr>
<tr>
<td><strong>Theory</strong></td>
<td>4 Many strategic objectives of the policy aim at improving economic and labour conditions, social security and protection, decent payment and the respect for human rights, which are important to reduce poverty.</td>
</tr>
<tr>
<td><strong>Practise</strong></td>
<td>2.75 There has been some improvement but there is a lack of social security coverage and the mining territories still have the highest poverty levels.</td>
</tr>
</tbody>
</table>

#### GOAL 2
**Zero Hunger**

<table>
<thead>
<tr>
<th>Relevance</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5</td>
<td>Land planning, clean water, improved sanitary conditions, diversified production and food sovereignty are weak in mining communities. Food insecurity may exist in subsistence mining, small-scale miners usually can prevent malnutrition.</td>
</tr>
<tr>
<td><strong>Theory</strong></td>
<td>3.17 There is no clear strategy within the policy to reduce hunger, but improved economic conditions help.</td>
</tr>
<tr>
<td><strong>Practise</strong></td>
<td>2.08 There hasn’t been much improvement, little has been achieved in land planning and economic diversification.</td>
</tr>
</tbody>
</table>

#### GOAL 3
**Good Health and Wellbeing**

<table>
<thead>
<tr>
<th>Relevance</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.5</td>
<td>Health and wellbeing is insufficient in mining communities due to water contamination, diseases caused by mercury, destruction of agricultural soils, bad management of waste, lack of sanitary conditions, sexually transmitted diseases, amongst others. Mining regions often lack access to health services.</td>
</tr>
<tr>
<td><strong>Theory</strong></td>
<td>3.83 The policy is designed to improve health and sanitary conditions, reduce vulnerability and risks. It requires the affiliation of workers to the social security system.</td>
</tr>
<tr>
<td><strong>Practise</strong></td>
<td>2.83 Trainings and awareness raising have improved working conditions. Many mines already comply with the social security affiliation.</td>
</tr>
</tbody>
</table>
### GOAL 4

**Quality Education**

<table>
<thead>
<tr>
<th>Source</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance</td>
<td>4</td>
<td>Educational levels in mining regions are generally low, in remote regions children may receive education only two to four times a year. Some miners can’t read and write and quality education for miners is missing.</td>
</tr>
<tr>
<td>Theory</td>
<td>2.5</td>
<td>Improved access to education isn’t included, only technical formation.</td>
</tr>
<tr>
<td>Practise</td>
<td>2</td>
<td>Professionalization and training have shown some results in specific regions.</td>
</tr>
</tbody>
</table>

### GOAL 5

**Gender Equality**

<table>
<thead>
<tr>
<th>Source</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance</td>
<td>4,17</td>
<td>Mining is a male-dominated sector and miners are chauvinist, but as mining often is the only economic activity in the region many vulnerable women perform the activity. There is a high dependence and women often have limited access.</td>
</tr>
<tr>
<td>Theory</td>
<td>2.33</td>
<td>Some projects to prevent sexual exploitation exist, but the policy doesn’t have a gender-approach or clear vision of promoting women.</td>
</tr>
<tr>
<td>Practise</td>
<td>1.83</td>
<td>Only some isolated activities were identified.</td>
</tr>
</tbody>
</table>

### GOAL 6

**Clean Water and Sanitation**

<table>
<thead>
<tr>
<th>Source</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance</td>
<td>4,83</td>
<td>Miners throw their wastes into the rivers, lakes and water bodies. Many mining towns do not have basic sanitary provision.</td>
</tr>
<tr>
<td>Theory</td>
<td>4</td>
<td>The protection of water sources is included in the policy.</td>
</tr>
<tr>
<td>Practise</td>
<td>2,5</td>
<td>There has been some progress in infrastructure, better water management and land planning in specific regions.</td>
</tr>
</tbody>
</table>

### GOAL 7

**Affordable and clean energy**

<table>
<thead>
<tr>
<th>Source</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance</td>
<td>2.67</td>
<td>Many territories lack access to energy and miners often use fuel and firewood. ASM hasn’t gotten yet to renewable energies but it will become increasingly important, a lot of energy is needed in the extraction process and using diesel or gasoline plants is very expensive.</td>
</tr>
<tr>
<td>Theory</td>
<td>1.67</td>
<td>The topic isn’t given priority because of more urgent problems.</td>
</tr>
<tr>
<td>Practise</td>
<td>0.83</td>
<td>No change observed.</td>
</tr>
</tbody>
</table>
## GOAL 8
### Decent work and economic growth

<table>
<thead>
<tr>
<th>Relevance</th>
<th>Theory</th>
<th>Practise</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,83</td>
<td>4,5</td>
<td>3,33</td>
</tr>
</tbody>
</table>

Many mines have extremely low labour standards.

These are priority issues of the policy.

There has been some positive change in specific regions.

## GOAL 9
### Industry, Innovation and Infrastructure

<table>
<thead>
<tr>
<th>Relevance</th>
<th>Theory</th>
<th>Practise</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,67</td>
<td>2.5</td>
<td>1.67</td>
</tr>
</tbody>
</table>

There may be potential for social or supply chain innovation, but in general ASM won't invent something new.

It is only included tangential through productive chains and the cooperation between large- and small-scale mining, but it isn't a priority, existing standards are applied.

There has been minor effort and progress.

## GOAL 10
### Reduced Inequalities

<table>
<thead>
<tr>
<th>Relevance</th>
<th>Theory</th>
<th>Practise</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,33</td>
<td>3,17</td>
<td>1,5</td>
</tr>
</tbody>
</table>

Many vulnerable groups are engaged in artisanal mining, which is a self-promoted way of reducing inequalities.

If formalized mining becomes a sustainable livelihood which supports local development, it has the potential to diminish inequality.

No change observed.

## GOAL 11
### Sustainable Cities and Communities

<table>
<thead>
<tr>
<th>Relevance</th>
<th>Theory</th>
<th>Practise</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,33</td>
<td>2,33</td>
<td>1,33</td>
</tr>
</tbody>
</table>

Mining communities aren't sustainable, secure housing is insufficient, lethal accidents and economic losses result from disasters, especially in informal mining.

The policy focuses primarily on the mining operations such as preventing disasters, improving security and mine rescue, it doesn't include its environment.

Few activities have been implemented.

## GOAL 12
### Responsible Consumption and Production

<table>
<thead>
<tr>
<th>Relevance</th>
<th>Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,67</td>
<td>3,5</td>
</tr>
</tbody>
</table>

The use of chemical substances and resources are big problems. Consumers can make an impact if they consume responsibly produced minerals.

An aim is to achieve responsible production and consumption and identify supply and value chains.
<table>
<thead>
<tr>
<th>Practise</th>
<th>2,17</th>
<th>No change observed.</th>
</tr>
</thead>
</table>

**GOAL 13**  
**Climate Action**

<table>
<thead>
<tr>
<th>Relevance</th>
<th>2,67</th>
<th>Due to the quantity of small-scale projects the accumulated impact may not be insignificant.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory</td>
<td>2,5</td>
<td>There are some requirements such as the mine closure plans, but the topic is not very well framed and incorporated.</td>
</tr>
<tr>
<td>Practise</td>
<td>1,5</td>
<td>Some irresponsible mines were closed, apart from that no change was observed.</td>
</tr>
</tbody>
</table>

**GOAL 14**  
**Life below Water**

<table>
<thead>
<tr>
<th>Relevance</th>
<th>1,83</th>
<th>Mining in marine regions isn’t common, but water pollution affects indirectly.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory</td>
<td>1,33</td>
<td>Indirectly included through the protection of water resources.</td>
</tr>
<tr>
<td>Practise</td>
<td>1,17</td>
<td>No change observed.</td>
</tr>
</tbody>
</table>

**GOAL 15**  
**Life on Land**

<table>
<thead>
<tr>
<th>Relevance</th>
<th>4</th>
<th>Mining makes use of terrestrial resources and open-pit mining significantly impacts ecosystems and biodiversity. Mining attracts other industries such as construction or lumbering and miners create roads to areas that previously were disconnected. This results in colonization of areas and impacts ecosystems.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory</td>
<td>3,17</td>
<td>Environmental management plans are required but specific issues such as forestation or protection of biodiversity aren't included.</td>
</tr>
<tr>
<td>Practise</td>
<td>1,5</td>
<td>Efforts are being made by community councils in the Choco who define areas where mining is prohibited, but they have no power over criminal groups.</td>
</tr>
</tbody>
</table>

**GOAL 16**  
**Peace, Justice and strong Institutions**

<table>
<thead>
<tr>
<th>Relevance</th>
<th>4,17</th>
<th>Illicit mining, organized crime, violence and mortality rates are high in mining communities. The exclusion of miners from territorial planning generates conflict. Institutional involvement has been historically weak, government agencies aren’t coordinated and the absence in some territories resulted in armed groups taking over. Justice often is done by criminal groups, not by the justice system.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory</td>
<td>3,5</td>
<td>Establishing stable institutions that regulate the activity was a main objective of the policy. Peace building isn't included, which would be important in the post-conflict era.</td>
</tr>
</tbody>
</table>
Steps are taken to combat illicit mining, institutions have been established to work against illegal mining. There haven’t been any efforts to harmonize formalization with peace construction.

GOAL 17
Partnerships for the Goals

| Relevance | 3,83 | ASM significantly contributes to economic growth in the country, it is important in terms of exportations and is an important social sector. It is a marginalized sector and doesn’t have a strong voice in politics. |
| Theory    | 3,83 | The policy frames a future for small-scale mining but lacks articulation with other sectors to generate bigger impact. |
| Practise  | 2,5  | The partnerships of the government are basically through signing global conventions and establishing alliances with international cooperation. No alliances for miners exist. |
5. Analysis

This research shows that the inclusion of the ASM sector is very important for sustainable development in Colombia, due to its high economic, social and environmental impact. All the pillars of sustainable development are relevant for the sector, as highlighted in Figure 4. Twelve out of seventeen Sustainable Development Goals were classified as being of high importance, the other goals of medium importance. As the discussions with the experts – summarized in Table 2 - show, ASM currently performs poor in many goals, thereby contributing negatively to sustainable development.

Is the formalization policy aligned with the concept of sustainable development by including performance requirements that target at the improvement of economic, social and environmental practices?

The formalization policy is perceived as a valuable tool to improve the conditions in ASM, with the potential of transforming ASM into a sector that contributes to sustainable development. The requirements and implementation mechanisms which target at the five most important Sustainable Development Goals for ASM in Colombia (clean water and sanitation, decent work and economic growth, responsible consumption and production, no poverty and good health and wellbeing) are identified as high potential drivers of economic, social and environmental development. The document analysis showed the same results, although the policy doesn’t include any specific mechanism to eradicate poverty in mining communities. Nevertheless, decent work and economic growth, health and wellbeing should contribute to lower vulnerability and poverty levels.

In the expert’s opinion, the policy highly contributes to partnerships for the goals, peace, justice and strong institutions. The document analysis revealed significant efforts to reinvent the institutions of the sector, but peace and justice are very weak in mining regions and no mechanisms are included in the policy to tackle these issues.

The experts identified gaps regarding quality education, gender equality and reduced inequalities, which are very relevant issues but not well articulated in the policy. The document analysis identified the objective of formulating and implementing a strategy to strengthen the participation of women in mining, but there is no clear gender-approach to empower women. Quality education is limited to technical education
through capacity building and reducing inequalities is limited to an empowerment of ethnic communities, although artisanal mining engages much more vulnerable groups.

In a nutshell, the policy seems to be very strong in the economic part, strong in the environmental part and weaker in the social part. Some experts called the policy a technical tool and pointed out that many mining professionals who engage in formalization processes don’t have the capacity to facilitate a serious dialogue within and between the mining communities. The social aspect in formalization is limited to labour conditions and social security. Although the policy mentions that formalization shall result in wellbeing, poverty reduction and equitable distribution of resources, these problems are only indirectly addressed through better economic conditions. An anthropological focus is missing in the formalization discourse.

Of course formalization can’t be the single solution to all these complex issues. Many challenges, especially those from the social field, need to be addressed on a national level. More development policies, institutions and interinstitutional collaboration are needed to strengthen the mining territories. In general, the policy provides a good starting base for improved economic, social and environmental practice in the sector.

**Are ASM organizations able to comply with the requirements of the formalization policy?**

All experts agree that it is difficult but possible for small-scale miners to formalize, provided there is goodwill, patience, incentives, time, perseverance, information, support, training and financial resources. Miners agree that formalization is good and necessary, but complain that the requirements are too demanding for small-scale miners and normative instability makes it nearly impossible to achieve and maintain a formalization level over time. The main barriers are related to the legal and political system, territorial order and land planning. A pressing issue has been the lack of legal access. More or better solutions are needed for miners to work legally. Different strategies need to be implemented for criminal mining and mining without a mining title, currently they are often treated alike although there are many miners willing to work legally under a mining title.

Missing incentives are a major obstacle to formalization. Legal miners need to compete with illegal miners, they have a significant economic disadvantage and no added value
of being legal. Real incentives are needed to progress more rapidly, accompanied by awareness raising to break the culture of informality.

The barriers to capacity building, credits, information, knowledge, and professionalization need to be lowered so that more miners can advance in formalization.

**Has the implementation of the formalization policy proven successful to date by driving positive change in economic, social and environmental practices?**

The formalization program includes a small group of mining organizations, and not one has achieved an advanced formalization level until now. Only 1,694 mine units participated in the program by July 2017, which are those that comply with the prerequisites (having a mining title and an environmental license). The Mine Census of 2010 – which only included 23 out of 31 mining departments - identified more than 10,000 small-scale mining organizations (Ministerio de Minas y Energía 2012, p.18). Subsistence miners aren’t included in formalization processes and have not received any support. More than 80,000 gold panners are registered in the RUCOM system (Agencia Nacional de Minería 2017), but in reality there are much more. And there are remote regions, ethnic communities and conflict zones where the government doesn’t have access; no one knows how many people are mining in these territories.

Positive change has been observed in some topics in specific regions and isolated cases as detailed in Table 2, but there has not been any change on a large scale. Implementation is lacking behind and the policy hasn’t been able to unfold its potential. The implementation is still in the starting phase, public entities are still characterizing mine regions and working on methodologies without implementing, although the formalization policy has been published three and a half years ago. The performance of the government and its public entities, their inefficiency in handling processes, the lack of infrastructure, the absence of the state in conflict zones, weak progress and support by public entities in formalization matters are great barriers to formalization. Many of these issues have already been identified in the diagnose which preceded the publication of the formalization policy and there has been some progress in specific topics, but by far not enough to start a real transformation of the sector. The Ministry of Mines has good intentions and competent staff, but eventually their capacities and
resources are limited. It needs support and collaboration of more public entities to change the sector. The achievement of the formalization objective of 40% by 2019 will hardly be possible if progress advances at this pace and no solutions are found or improvements made to overcome the critical barriers to legalization and formalization.

**Does the inclusion of artisanal and small-scale miners into the formal economy improve the economic, social and environmental performance of the sector to be able to contribute to sustainable development in Colombia?**

Currently the ASM sector in Colombia is a negative contributor to sustainable development with a significant economic, social and environmental impact. The formalization discourse has the potential to contribute to economic development and decrease significantly the sector’s environmental impact. The social component is weaker, but can be strengthened through complementary programs in collaboration with other public entities. In theory, formalization is a valid strategy for ASM to improve practices and contribute to sustainable development in the three pillars. Experts as well as miners highlighted the sector’s general potential to drive strong economic and social development in Colombia due to its importance for local economies and rural communities. Regarding the environmental pillar, mining can be done with environmental responsibility, not just correcting negative impacts but compensating them on a bigger scale.

Still, theory hasn’t been translated into practice yet, as there are too many barriers to formalization. Colombia suffers from the typical structural challenges of ASM as cited by Buxton (2013, p.7) in chapter 2.2. A favourable environment and strengthened and conflict-free territories are needed before formalization can unfold its potential and transform the sector. The main challenges are to establish a stable and inclusive legal and political system, solid institutions, an efficient administration of the sector and peace. These are the necessary preconditions to start formalizing. Only in a favourable environment, formalization activities will have an impact on a large scale and transform the sector from a negative to a positive contributor of sustainable development.
6. Conclusion

To conclude this research, the researcher would like to reflect on the vision of a responsible artisanal and small-scale gold mining sector, which is aligned with the concept of sustainable development:

“Artisanal and small-scale mining is a formalized, organized and profitable activity that is technologically efficient and socially and environmentally responsible; the sector’s development takes place within a framework of good governance, legality, participation and respect for diversity; it seeks to make an increasing contribution to decent work, local development, poverty reduction and social peace within our countries, stimulated by growing consumer demand for sustainable minerals and ethical jewellery.” (Echavarria 2008, pp.12–14).

In Colombia, the ASM sector unfortunately is far away from this vision: 87% of artisanal and small-scale gold mining is informal. It is unorganized as people open holes wherever they want to, in the hope of finding gold to be able to feed their families. It is often unprofitable as miners don’t know about the geological potential and have no technical or administrative capacities. It is technologically inefficient and applies irresponsible environmental practises. The governance of the sector is weak, there is a lack of legal access, ASM miners aren’t included in the decision-making and the diversity and reality of the sector aren’t taken into account at the moment of making laws. Labour conditions are often hazardous, surpluses of large-scale mining aren’t invested in the territories but transferred to other regions or countries, poverty in mining communities is widespread and mining fuels conflict in many territories. And very few consumers ask where their gold comes from.

To put it bluntly, the ASM sector in Colombia has been unsustainable, with a negative economic, social and environmental impact. Still, it is the only livelihood opportunity for many Colombians, it has the potential to drive local economic and social development and is a possible force to eradicate poverty in remote and marginalized communities.
The Colombian government is aware of the challenges of the sector and determined to tackle them by adopting a strict discourse. As Álvarez (2016, p.59) states, the two options are: formalization or criminalization.

Artisanal gold mining has been performed on the margins of the ley throughout history and this culture of informality will hardly be broken through prohibition, as the potential economic gains of gold mining are too attractive, the alternative income opportunities rare and the State absent in many territories. The recommendation is to focus on facilitating and incentivizing legalization and formalization, as they are promising strategies to transform the negative impacts into positive ones.

This research shows that formalized ASM has a high potential to contribute to economic and social development and environmental protection. The current formalization discourse of the Colombian government is a promising starting point to improve the governance of the sector, but there are many shortcomings, such as the legal framework, administration and support programs, missing incentives and conflict. The government itself has identified these problems and it should start to act, implement and create a favourable environment for ASM.

The formalization of ASM should become a structural long-term program such as the formalization and strengthening of farmers. These activities should be driven by a differential, territorial and post-conflict focus, including all the different mining types and scales, as well as other economic activities, to create a peaceful territorial order and shape support programs according to real needs of the diverse regions. Royalties generated by mining in the territories should be re-invested in the same to support sustainable development. The country should look at the things that have worked well and strengthen these processes. Through an empowered artisanal and small-scale mining sector everyone would win: The State, the miners and the communities.
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## Appendix 1: List of Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASM</td>
<td>Artisanal and small-scale mining</td>
</tr>
<tr>
<td>BC</td>
<td>before Christ</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>GDIAM</td>
<td>Grupo de Diálogo sobre la minería en Colombia</td>
</tr>
<tr>
<td>ILO</td>
<td>International Labour Organization</td>
</tr>
<tr>
<td>MMSD</td>
<td>Mining, Minerals and Sustainable Development</td>
</tr>
<tr>
<td>RUCOM</td>
<td>Registro Único de Comercializadores de Minerales</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
</tbody>
</table>
### Appendix 2: Participants focus group

<table>
<thead>
<tr>
<th>Name</th>
<th>Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rolberto A. Álvarez</td>
<td>Representative of the Asociación Minera la Fortaleza, Nariño</td>
</tr>
<tr>
<td>Cristian Javier García Bravo</td>
<td>Representative of the mining cooperative Comilán, Nariño</td>
</tr>
<tr>
<td>Cristian Jhonathon Apraez Marroquin</td>
<td>Representative of the small-scale mining company La Golondrina, Nariño</td>
</tr>
<tr>
<td>Daniel Osvaldo Matabajoy Riascos</td>
<td>Representative of the small-scale mining cooperative Coodmilla, Nariño</td>
</tr>
<tr>
<td>Luis Alfredo González</td>
<td>Representative of the Iquira cooperative, Huila</td>
</tr>
</tbody>
</table>
## Appendix 3: Participants expert interviews

<table>
<thead>
<tr>
<th>Name</th>
<th>Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carlos E. Bermudez</td>
<td>Employee of the Formalization Department of the Colombian Ministry of Mines and Energy.</td>
</tr>
<tr>
<td>Cristina Echavarría</td>
<td>Independent researcher with 30 years of experience in ASM.</td>
</tr>
<tr>
<td>Elizabeth Echavarría</td>
<td>Public policy official and researcher on the formalization of ASM in Colombia.</td>
</tr>
<tr>
<td>Jairo Alonso Cárdenas</td>
<td>Mine engineer working on formalization projects, with 11 years of work experience in small- and medium-scale mining in Colombia.</td>
</tr>
<tr>
<td>Jónnathan Osorio Pineda</td>
<td>Chief of Social Management within Continental Gold, a large-scale mining company closing formalization subcontracts with ASM organizations and associations.</td>
</tr>
<tr>
<td>Mauricio Narváez Montero</td>
<td>Undersecretary of mines from the local government of Nariño.</td>
</tr>
<tr>
<td>Natalia González Parias</td>
<td>Economist and coordinator of the Mining Services Unit within the Alliance for Responsible Mining, with 9 years of experience in ASM.</td>
</tr>
<tr>
<td>Silvio Andrés López</td>
<td>Independent consultant and former employee of the Ministry of Mines and Energy who coordinated the development of the Formalization Policy.</td>
</tr>
</tbody>
</table>
Appendix 4: Interview guide (Spanish)

Preguntas entrevista de expertos

Preguntas generales
Nombre:
Cargo:
Antigüedad en el cargo:
Que tipo de conocimiento y experiencia tiene alrededor de la minería artesanal y de pequeña escala:
Que tan familiar está con la política de formalización, en una escala de 0 a 5 donde 0 significa: no estoy familiar con ella y 5 significa: estoy muy familiar con ella.

Pregunta sobre política de formalización
La visión a corto plazo de la política: "En 2019 la minería de pequeña y mediana escala en Colombia se caracterizará por ser una industria formalizada en un 40% en aspectos legales, técnicos, ambientales, económicos, tributarios, sociales y laborales, a través del apoyo del Estado mediante la ejecución de programas, proyectos y estrategias. La formalización de la actividad hará de la minería un sector más competitivo, que genere desarrollo y equidad social."
¿Tiene conocimiento sobre como va la implementacion de la política de formalización comparado con la visión, a Julio 2017?
¿Lo ve factible que se logra los 40% hasta 2019?
¿Cuáles mecanismos o actividades hay para implementar la política?
¿En su opinión, cuales son las fortalezas de la política de formalización?
¿Cuáles son las debilidades?
¿En cuales aspectos ha sido exitosa la implementación de la política?
¿En cuales aspectos no ha sido exitosa la implementación?
¿En su opinión, es posible para los pequeños mineros de oro cumplir con los requisitos de la política de formalización?
¿En cuales aspectos es fácil para ellos cumplir con los requisitos?
¿En cuales aspectos es difícil cumplir con los requisitos?
¿En su opinión se logrará cumplir la meta de formalizar la minería hasta 2019 en un 40%?
¿Cuáles son los desafíos más grandes para lograr el objetivo? Se puede decir si los desafíos están mas relacionados con el campo económico, social o ambiental?

Seguimos con el documento: Tabla de Respuestas ODS
### Appendix 5: Response table (Spanish)

#### TABLA DE RESPUESTAS

Nombre entrevistado(a)__________________________
Ciudad y Fecha ________________________________

<table>
<thead>
<tr>
<th>OBJETIVO de Desarrollo Sostenible</th>
<th>RELEVANCIA ¿La temática es relevante para la minería artesanal y de pequeña escala de oro en Colombia? (Puntaje: 0 no es relevante, 5 muy relevante)</th>
<th>LA TEORÍA Pregunta: ¿Qué potencial de contribución al objetivo tiene la política de formalización? (Puntaje: 0 ninguna contribución, 5 alta contribución; -1 contribución negativa)</th>
<th>LA PRÁCTICA Pregunta: ¿La implementación de la política de formalización ha generado cambios en este objetivo? (Puntaje: 0 ninguna mejora, 5 alta mejora)</th>
<th>EXPLICACIÓN Pregunta: Por favor explique su respuesta</th>
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<tr>
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<td>2 HAMBRE CERO</td>
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<td>3 SALUD Y BIENESTAR</td>
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<td>4 EDUCACIÓN DE CALIDAD</td>
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<td>5 IGUALDAD DE GÉNERO</td>
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<td>6 AGUA LIMPIA Y SANEAMIENTO</td>
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<td>7 ENERGÍA SUSTENTABLE Y NO CONTAMINANTE</td>
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<td>8 TRABAJO DECENTE Y CRECIMIENTO ÉCONOMICO</td>
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<td>9 INDUSTRIA, INNOVACIÓN E INFRAESTRUCTURA</td>
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<td>10 REDUCCIÓN DE LAS DESIGUALDADES</td>
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<tr>
<td>11 CIUDADES Y COMUNIDADES SUSTENTABLES</td>
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<td>12 PRODUCCIÓN Y CONSUMO RESPONSABLES</td>
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<td>13 ACCIÓN POR EL CLIMA</td>
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<td>14 VIDA SUBMARINA</td>
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<td>15 VIDA DE ECOSSISTEMAS TERRESTRES</td>
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<td>16 PAZ, JUSTICIA E INSTITUCIONES SÓLIDAS</td>
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<tr>
<td>17 ALIANZAS PARA LOGRAR LOS OBJETIVOS</td>
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### Appendix 6: Formalization Policy – Document Analysis

<table>
<thead>
<tr>
<th>Sustainable Development Goal</th>
<th>Selected indicators that are relevant for ASM in Colombia, based on the literature review and the researcher’s knowledge</th>
<th>Cited passages in the formalization policy that make reference to the issue or include performance requirements</th>
<th>Qualitative analysis</th>
<th>Potential contribution of the policy</th>
</tr>
</thead>
</table>
| **Goal 1. End poverty in all its forms everywhere** | 1) Eradicate poverty  
2) Equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, natural resources, appropriate new technology and financial services  
3) build the resilience of the poor and those in vulnerable situations | Through a strong institutional articulation, the governance, management and administration of the sector shall be improved which shall lead to lower poverty levels, wellbeing of communities and a more equitable distribution of natural resource (p. 6).  
Mining regions have been behind in the economic, social and cultural development. Instead of being a driver of territorial development, mining has been a poverty-driven activity with negative environmental and social impact. Basic needs of mining families aren’t met and they have limited access to education, health systems and work (p. 32).  
Mining is related to complex socio-cultural and economic conditions and often isn’t performed as a business but a subsistence activity which may reinforce or prolong poverty (p. 36).  
Formalization will improve living conditions of mining communities through the application of good practices (p. 70).  
The central problem identified in the policy are the low levels of formalization in mining regarding legal, technical, environmental, economic, tax, social and labour aspects, which lead to negative social and environmental impacts, poverty and a low human development index (p. 71). | The existence of poverty in mining territories is acknowledged but there are no specific mechanisms to target poverty eradication, it is only indirectly targeted through economic development and a better administration of the sector. | 3 |
| **Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture** | 1) Access to safe, nutritious and sufficient food  
2) Improve incomes of small-scale food producers | The formalization policy makes no specific reference to food insecurity in mining communities, the topic is only indirectly targeted | 3 |

54
| Goal 3. Ensure healthy lives and promote well-being for all at all ages | 1) End epidemics  
2) Strengthen the prevention and treatment of substance abuse  
3) Achieve health coverage, including financial risk protection  
4) Reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination | Requirements for “Level 2: Formal Mining”: Mining organizations need to pay social security for their workers (p. 45).  
50% of the labour force in mining have temporary contracts, service contracts or contracts for specific tasks. 20% aren’t affiliated to the health and safety system (p. 66). | Improving mine security and protecting workers by affiliating them to the social security system are requirements to become formalized. The health problems related to sexually-transmitted diseases and alcohol abuse in mining communities isn’t targeted. |
|----------------------|---------------------------------------------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all | 1) Free, equitable and quality primary and secondary education  
2) Increase the number of people who have relevant skills for employment, decent jobs and entrepreneurship  
3) Equal access to affordable and quality technical, vocational and tertiary education, including university  
4) Achieve literacy and numeracy | Low education levels of miners hamper an efficient development with limited economic benefits (p. 16).  
The Mining Census shows that 61% of miners have only basic primary education, 23% secondary education and only 6% a superior grade of education (p. 32).  
Miners have low levels of normative, technical, environmental, labour and business knowledge to become formalized (p. 69).  
A strategic objective of the formalization policy is creating capacities through educational programs and the reconversion of labour (p. 74).  
Implement the capacity building program for formalization to train 30.000 miners until December 2019 through agreements with educational facilities (Annex).  
Implement program of labour reconversion in mining (Annex). | Technical education through capacity buildings is included in the policy, higher education and literacy aren’t targeted. |
| Goal 5. Achieve gender equality and empower all women and girls | 1) End discrimination  
2) Eliminate all forms of violence against women  
3) Equal rights to economic resources, access to ownership and control over land and other forms of property, financial services, inheritance and natural resources  
4) Full and effective participation and equal opportunities for leadership | Formulate and implement a strategy to strengthen the participation of women in mining (Annex).  
Perform activities to end sexual exploitation and sex trade in mining areas (Annex). | There are specific activities included to empower women. | 3.5 |
|---|---|---|---|---|
| Goal 6. Ensure availability and sustainable management of water and sanitation for all | 1) Access to safe and affordable drinking water  
2) Access to adequate and equitable sanitation and hygiene  
3) Reduce pollution, eliminate dumping and minimizing release of hazardous chemicals and materials  
4) Increase water-use efficiency, integrated water resources management, protect and restore water-related ecosystems | The Ministry of Mines and Energy is working together with the Ministry of Environment and Sustainable Development to implement programs and activities to get a better knowledge on mining’s impact on water resources and how to reduce it to protect these resources. These activities include:  
- The formulation of a national water plan  
- Implementation of an information system on water resources  
- Updated norms  
- Evaluate the impact of mining on water resources (p. 19).  
Requirements for “Level 2: Formal Mining”: Mining organizations need to implement the measures that regulate environmental management, including the protection of water sources (p. 45). | The protection of water sources is a priority within the policy. | 4.5 |
| Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all | 1) Access to affordable, reliable and modern energy services  
2) Increase share of renewable energy  
3) Improvement in energy efficiency | | The formalization policy makes no specific reference to energy use, there may only be some positive contingency through technical improvements. | 1.5 |
| Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all | 1) Per capita economic growth 2) Higher productivity through diversification, technological upgrading and innovation 3) Support productive activities, decent job creation, entrepreneurship, creativity and innovation 4) Encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services 5) Employment and decent work for all 6) Elimination of the worst forms of child labour 7) Protect labour rights and promote safe and secure working environments for all workers 8) Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all | A low level of entrepreneurship, association and incorporation into the banking system hamper productivity and competitiveness (p. 32). Requirements for “Level 1: Basic Mining”: Mining organizations need to have a basic organizational and financial structure, a basic cost calculation and a business plan, an association plan or a community development plan (p. 45). Requirements for “Level 2: Formal Mining”: Mining organizations need to have a budget and pay taxes (p. 46). Requirements for “Level 3: Advanced Formal Mining”: have a financial management system and a business plan, be a user of the banking system, have certifications (process, products or quality), implement optimization processes (p. 46). The Mining Census showed that 90% of the evaluated mining organizations don’t have access to financing, limiting growth opportunities (p. 67). Miners have insufficient economic resources to become formalized (p. 69). Entry barriers to legal mining are high (p. 69). Lack of application of specific norms for ethical communities to facilitate formalization (p. 69). Formalization will help to generate improved quality work opportunities (p. 70). Formalization will increase sales of minerals because of the application of good practices (p. 70). The weak infrastructure in the country hampers sustainable growth of formal mining (p. 71). Strategic objectives of the formalization policy are to: 1) strengthen associative schemes that are financially and economically viable 2) establish economic programs that aim at helping informal miners to access credits (p. 74). In 2011 the National Policy for Mine Security was adopted to improve security | This is a priority topic in the policy with specific measures on economic improvements, financial access, specific protection of vulnerable groups such as children and elderly people. |
in Colombian mines. The Policy is structured around the following pillars:

- Preventive focus
- Stricter technical requirements
- Active participation and commitment by interested parties
- Consolidation of a public information system on mine security (p. 22).

Capacity building of mine owners and workers and technical visits. Seminars with national and international experts on prevention activities and technology transfer (p. 22).

Low educational levels and lack of technical knowledge result in low productivity and rentability, which affects the wellbeing of mining communities (p. 34).

Requirements for “Level 2: Formal Mining”: Mining organizations need to 1) have the mine work plan approved which includes technical requirements and the environmental license 2) implement the mine security regulations 3) Have the allowance to use explosives (p. 45).

Requirements for “Level 2: Formal Mining”: Mining organizations need to comply with the requirements of the security and health management system which includes mine risk management, capacity building, preventive and corrective measures and the emergency plan (p. 45).

The Mining Census showed that 72% of the mining organizations don’t implement security, hygiene and occupational health measures. In the case of those that don’t have a mining title the percentage is 84% and those that have a mining title 50% (p. 63).

A strategic objective of the formalization policy is differential inclusion and social development, including fundamental issues such as abolition of child labour (p. 74).

Analyse socio-economic needs of mining areas and formulate and implement a program of socioeconomic interventions (Annex).

Support the conformation and strengthening of small-scale mining
| Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation | 1) Develop quality, reliable, sustainable and resilient infrastructure  
2) Inclusive and sustainable industrialization  
3) Increase the access of small-scale industrial and other enterprises to financial services, including affordable credit, and their integration into value chains and markets  
4) Increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes | Despite the royalties generated by mining areas, most of these don’t have a minimal infrastructure such as roads, schools, hospitals or aqueducts (p. 32).  
Requirements for “Level 1: Basic Mining”: Mining organizations need to have a baseline on technical aspects of the mining operation where they apply guides (p. 45).  
Requirements for “Level 3: Advanced Formal Mining”: Mining organizations shall apply best practice, innovation, technological development and implement clean technologies (p. 46).  
Lack of presence of the State in the mining areas (p. 69).  
Low levels of technology development to become formalized (p. 69).  
Establish a center and funds for technological development. Start 5 projects of technological development and innovation for formalization until December 2019 (Anbex). | There are some specific measures in the policy to improve technological development, but only at an advanced level. Innovation isn’t incentivized.  
2.5 |
| Goal 10. Reduce inequality within and among countries | 1) Empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status | Through a strong institutional articulation, the governance, management and administration of the sector shall be improved which shall lead to lower poverty levels, wellbeing of communities and a more equitable distribution of natural resource (p. 6).  
Requirements for “Level 2: Formal Mining”: Mining organizations need to realize a previous consultation if they mine in areas of ethnical communities (p. 46).  
Requirements for “Level 3: Advanced Formal Mining”: Mining organizations | The policy aims at decreasing inequality, but limits it to ethnical communities, although there are many other vulnerable groups in mining.  
3 |
| Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable | shall help include more miners within a legal mining title (p. 46).
Identify and analyse mine projects in ethno-ethnic communities and formulate and implement support programs in 40% of these communities until December 2019 (Annex).
Create economic and social empowerment schemes for ethnic communities (Annex).
Create norms that facilitate formalization of small-scale mining in ethnic communities (Annex). | Most requirements and mechanisms in the policy target at the mining organization and not the community. | 2 |
| Goal 12. Ensure sustainable consumption and production patterns | 1) Access for all to adequate, safe and affordable housing and basic services
2) reduce the number of deaths and the number of people affected by disasters | Create integral development schemes for communities that are influenced by mining (Annex). | The Ministry of Mines and Energy is working together with the Ministry of Environment and Sustainable Development on programs and activities for more competitive and sustainable production processes (p. 19).
The Ministry of Mines and Energy is working together with the Ministry of Environment and Sustainable Development on the formulation and implementation of environmental mining management instruments to improve efficiency of environmental control processes and environmental performance of the industry.
Develop the national plan for land use for mining (Plan Nacional de Ordenamiento Minero) which shall include environmental policies, norms etc. and those that regulate the use of territory.
Promote good practice and technology to improve efficiency in gold mining, especially related to mercury and cyanide use.
Promote technological research in the environmental mining sector.
Develop and apply a strategic framework for Corporate Social Responsibility for the mining sector and districts (p. 20). | Sustainable production is a priority of the policy, the promotion of sustainable consumption isn’t included at all. | 4 |
<p>| Goal 13. Take urgent action to combat | 1) Integrate climate change measures into national policies, | | The Ministry of Mines and Energy is working together with the Ministry of Environment and Sustainable Development on the formulation and implementation of environmental mining management instruments to improve efficiency of environmental control processes and environmental performance of the industry. | 3 |</p>
<table>
<thead>
<tr>
<th>Climate change and its impacts*</th>
<th>strategies and planning</th>
<th>implementation of the national low carbon development strategy and the national forest strategy in mitigation and adaptation for climate change (p. 19). Requirements for “Level 2: Formal Mining”: Mining organizations need to implement the measures that regulate environmental management, including the atmospheric emissions (p. 45).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development</td>
<td>1) Reduce marine pollution and contamination 2) sustainably manage and protect marine and coastal ecosystems</td>
<td>Not specifically mentioned nor relevant but indirectly targeted through protection of water sources.</td>
</tr>
<tr>
<td>Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss</td>
<td>1) Ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands 2) Halt deforestation, restore degraded forests 3) Ensure the conservation of mountain ecosystems, including their biodiversity 4) Reduce the degradation of natural habitats</td>
<td>The Ministry of Mines and Energy is working together with the Ministry of Environment and Sustainable Development to implement programs and activities to 1) protect and conserve ecosystems affected by mining 2) prevent and control environmental degradation (p. 19). These include: • Minimization of contamination through mercury and other chemical substances or other hazardous wastes • Improve the environmental management in mine closure projects • Exclusion of areas for mining • Internalizing environmental costs in mine project planning (p. 20). Hold capacity building workshops on mercury use and elimination (p. 20). Requirements for “Level 1: Basic Mining”: Mining organizations need to have an environmental baseline in place (apply guides and perform environmental studies) (p. 45). Requirements for “Level 2: Formal Mining”: Mining organizations need to implement the measures that regulate environmental management, including the protection of ecosystems and forests (p. 45).</td>
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Which guides? 4
| Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels | 1) Significantly reduce all forms of violence and related death rates everywhere  
2) Ensure equal access to justice for all  
3) Combat all forms of organized crime  
4) Develop effective, accountable and transparent institutions at all levels  
5) Ensure responsive, inclusive, participatory and representative decision-making at all levels  
6) Strengthen relevant national institutions to prevent violence and combat terrorism and crime | Despite numerous intents, the State hasn’t been able to solve the sector’s problems. The vast quantity of norms and deficient institutional infrastructure hampered the efficiency of the State to respond to the necessities of mining communities (p. 33).  
There is a lack of clear policies to control illegal mining which has negative environmental and social affects (p. 34).  
Requirements for “Level 3: Advanced Formal Mining”: Develop Corporate Social Responsibility activities and have a social management plan in place (p. 46).  
Armed conflict hampers formalization processes (p. 71).  
Lack of legal security and normativity to develop mine activities (p. 72).  
A strategic objective of the formalization policy is a better interinstitutional coordination between the different State entities for an efficient management (p. 74).  
Implementation of projects to create schemes for a better articulation and coordination between different institutions and generate and improve tools for efficient and responsive formalization handling processes (Annex).  
Implement processes and modify norms to facilitate and speed up formalization proceedings (Annex).  
Update Mine Census by 2015 (Annex). | Improvement of institutions to regulate mining has been a main priority of the policy. There aren’t specific mechanisms or activities included to combat violence and conflict in mining communities. | 3 |
| Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development | 1) Increase the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts  
2) Develop measurements of progress on sustainable development | A strategic objective of the formalization policy is to set up an information system to support the formalization process (p. 74). | The policy doesn’t refer to any international alliances. There have been big efforts to improve data on the sector. | 3 |