

# Mining in Sonora: a key component in achieving the 17 sustainable development goals (SDGs) of the 2030 Agenda

## La minería sonorense, pieza clave en el cumplimiento de los 17 Objetivos del Desarrollo Sostenible (ODS), en la agenda 2030

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### Abstract

In recent years, the concept of sustainable development (SD) has been strengthened, since its first description adopted by the Bruntland Commission in 1987; Recently, the 195 Members of the United Nations (UN) approved a document entitled "Transforming Our World: The 2030 Agenda, for Sustainable Development (ODS)", which will be in force during the years 2015 to 2030. Economic, social and environmental growth and development are impacted by various economic activities such as mining, and these not only locally, they transcend borders, clearly these impacts can be used to create new infrastructures, new technologies and opportunities in relationship with the workforce, highlighting that this industry has the opportunity and the necessary potential to contribute positively to the achievement of the 17 Sustainable Development Goals (SDG), in the new 2030 agenda; The objective of this article is to describe and analyze the impact of the 17 SDGs, from the "Economic Development" section or section, specifically SDG 8, 9 and 12, in gold mining

in the state of Sonora, with emphasis on the region of Caborca, Sonora, Mexico, in the period from 2008 to 2018.

**Keywords:** environmental economics, regional development, mining, 17 SDG 20-30 agenda.

**JEL codes:** L72, Q01, Q32 and Q43

### Resumen

En los últimos años, el concepto de desarrollo sostenible (DS), se ha fortalecido, desde su primera descripción adoptada por la Comisión Bruntland en el año 1987; recientemente los 195 Miembros de la Organización de las Naciones Unidas (ONU), aprobaron un documento titulado "Transformar Nuestro Mundo: La Agenda 2030, para el Desarrollo Sostenible (ODS)", los cuales estarán vigentes durante los años del 2015 al 2030.

El crecimiento y desarrollo económico, social y ambiental, se ven impactados por varias actividades

económicas como lo es la minería, y estos no solo en lo local, estos trascienden fronteras, claramente dichos impactos pueden aprovecharse para crear nuevas infraestructuras, nuevas tecnologías y oportunidades en relación con la fuerza de trabajo, destacando que esta industria tiene la oportunidad y el potencial necesario para contribuir positivamente en el logro de los 17 Objetivos del Desarrollo Sostenible (ODS), en la nueva agenda 2030; el objetivo de este artículo se centran en describir y analizar el impacto de los 17 ODS, desde el apartado o sección “Desarrollo Económico”, específicamente los ODS 8, 9 y 12, en la minería de oro del estado de Sonora, con énfasis en la región de Caborca, Sonora, México, en el período de 2008 al 2018.

**Palabras claves:** economía ambiental, desarrollo sostenible, minería, 17 ODS en la Agenda 20-30.

**Códigos JEL:** L72, Q01, Q32 y Q43

## Introduction

Over the years, society and science have joined forces to raise awareness and promote actions that help mitigate and reduce the effects of climate change on our planet. This has led to deep reflection and debate around the study of topics linking economic activities and the environment. This relationship is based on the argument that the origin of environmental problems lies in the growth of any economic activity, resulting in pollutant emissions. Mining, as a primary economic activity, generates a high demand for natural resources, most of which are non-renewable, affecting environmental assets. The production of goods and/or services inevitably impacts environmental quality. (Escalante R., et al., 2005). Hence, the importance of studying the relationship between economic activities and the sustainable development of a region becomes a global priority, reflected in the new 2030 Agenda and its 17 Sustainable Development Goals (SDGs).

### 1. Mining and its role in achieving the 17 SDGs of the 2030 Agenda.

One of the most internationally prominent industrial sectors is undoubtedly mining. This economic activity focuses on the extraction of metals from the earth on a medium or large scale. Given that these

resources are non-renewable, controversies arise, arguing that mining contradicts the principles of sustainability. However, mining significantly contributes to the prosperity and well-being of both current and future generations. (Orellana J., 2016). A proposal for achieving Sustainable Development (SD) within the mining context was put forward by Jenkins and Yakovleva in 2006. They argue that sustainability is attainable if three key aspects are met:

1. *The depletion of mineral resources, as these are extracted, they can be compensated by new capital uses that benefit both present and future generation.*
2. *Resource exhaustion should not pose a future problem, many non-combustible metals and minerals can be recovered through recycling and reused.*
3. *The discovery of new mineral deposits combined with technological advancements, this enables improved recovery process, making it possible to apply sustainable development to and from the mining industry (Jenkins et al., 2006).*

Some actions supporting the achievement of Sustainable Development and the SDGs within the “2030 Agenda” highlight the importance of mining in the United Nations' (UN) renewed commitment to reduce the carbon footprint and carbon dioxide (CO<sub>2</sub>) emissions, as well as other greenhouse gases contributing to global climate change. This reinforces a global action plan for social inclusion, environmental sustainability, and economic development. The participation of the mining sector is vital for achieving the 17 SDGs. Therefore, several international protocols and documents have been developed to strengthen sustainable mining, such as:

- *The “Proyecto Minería Minerales y Desarrollo Sostenible” (MMDS) project, which outlines compliance with commitments established in Agenda 21, defining short, medium, and long-term objectives for the sector.*
- *The Regional Seminar “Minería para un futuro bajo en Carbono: Oportunidades y desafíos para el Desarrollo Sostenible”, held on June 4th and 5th in 2018, at CEPAL headquarters in Santiago, Chile, emphasized the connection between the mining sector and climate change challenges. It*

recognized mining as a fundamental element in mitigating greenhouse gas emissions associated with climate change.

- The Foro Económico Mundial, in collaboration with the Programa de las Naciones Unidas para el Medio Ambiente (PNUMA), the Columbia Center on Sustainable Investment, and the Red de Soluciones para el Desarrollo Sostenible, affirms that large-scale mining has the potential to play a critical and transformative role in supporting the SDGs through the adoption of best practices.

The final compilation of these initiatives is the report “Cartografía de la minería en relación con los ODS”, which highlights the local, regional, and national impact of mining on development and economic growth. It suggests mining can be leveraged to create new infrastructure, technologies, and workforce opportunities. This approach proposes that mining operations should identify their opportunities, responsibilities, and roles within the framework of the 17 SDGs. Increasing collaboration between governments, communities, civil society, and other stakeholders is essential to achieve the SDGs. This proposal, summarized in an atlas, serves as a model for the mining sector and aims to achieve the following outcomes:

1. Improve understanding of the relationship between mining and the SDGs.
2. Raise awareness about the opportunities and challenges that the SDGs present to mining and its stakeholders, including how to address them in efforts to reduce the carbon footprint.
3. Establish dialogue and collaboration among multiple stakeholders to accomplish the SDGs.

According to PNUMA, most materials extracted through mining serve as raw inputs for countless industrial production processes essential for creating new technologies or enhancing existing ones. It is acknowledged that mining, as an economic activity, can influence the achievement of the 17 SDGs either positively or negatively. It facilitates opportunities for decent employment, business development, and increased public revenue in local communities. This close relationship between mining and the SDGs is illustrated in a visual developed by the UN, showing the impact of each goal on mining activities. Implementing these strategies can help reduce both the carbon and water footprint of the mining industry.

**Illustration 1.** Thematic objectives of the 17 sustainable development goals

## Main thematic areas of mining and the SDGs



Source: Mapping of mining in relation of the Sustainable Development Goals. Recovered from: [https://irpcdn.multiscreensite.com/be6d1d56/files/uploaded/Mapping\\_Mining\\_SDGs\\_An\\_Atlas-Spanish-FINAL-cover.pdf](https://irpcdn.multiscreensite.com/be6d1d56/files/uploaded/Mapping_Mining_SDGs_An_Atlas-Spanish-FINAL-cover.pdf), Retrieved on June 5th, 2019.



Mining has made considerable advances in mitigating and managing the reduction of Carbon Dioxide (CO<sub>2</sub>), as well as in addressing the intrinsic effects and risks of this activity. These actions have helped reduce environmental degradation, population displacement, and exacerbation of economic inequalities through improved sustainability practices across the three pillars of sustainable development, such as: managing environmental and social consequences, protecting workers' health, ensuring energy efficiency, incorporating new environmentally friendly technologies, respecting and supporting human rights. These adaptations have shifted mining's contribution positively toward achieving the 17 SDGs, highlighting that the success of these actions, measures, and opportunities will entirely depend on:

*“the social, political, and economic context, as well as the mineral resource in question, during its various phases of exploration, development, extraction, or closure, and on contributions made by local communities and other stakeholders through dialogue”*. Cepal, Minería para un futuro bajo en Carbono, 2020.

The 17 SDGs are primarily described within the three spheres of sustainable development as follows:

**A. Environmental sustainability:** This group encompasses all mining activities that typically affect the land, water, climate, flora, and fauna — resources on which we depend. The first conjunction of goals appears between SDG 6 (Clean Water and Sanitation) and SDG 15 (Life on Land), because mine construction requires access to land or subsoil as well as water resources, which impacts the land and natural resources. The next conjunction is between SDG 7 (Affordable and Clean Energy) and SDG 13 (Climate Action): the large amounts of energy required by mining, and the generation of dust, must be measured and provide opportunities to increase energy efficiency.

**B. Social inclusion** This section considers the significant positive and negative consequences mining can have on local communities by generating opportunities and challenges related to livelihoods and human rights. The relationship among SDG 1 (No Poverty), SDG 5 (Gender Equality), and SDG 10 (Reduced Inequalities) describes mining's contribution as a large-scale generator of business opportunities, local employment, and substantial revenues via taxes, royalties, and dividends, which governments can invest in economic or social

development. SDG 16 (Peace, Justice, and Strong Institutions) mentions how mining can support building peaceful societies and consolidating the rule of law by preventing and resolving conflicts between companies and local communities.

**C. Economic development:** This section analyzes mining's impact on economic potential at local, regional, and national levels, which can be leveraged to create new infrastructure, technologies, and workforce opportunities. SDG 8 (Decent Work and Economic Growth) focuses on generating new economic opportunities for citizens and developing service providers or new local economies linked to the mine. SDG 9 (Industry, Innovation, and Infrastructure) and SDG 12 (Responsible Consumption and Production) show that mining can boost economic diversification and development through its direct and indirect economic benefits and by fostering the construction of new infrastructure for communication, transport, water, and energy supply.

For Mexico, the mining sector with the greatest international projection includes metallic minerals such as gold, silver, and copper, generating the highest revenues with an income of 153,044.3 million pesos, representing 80.5% of the national total (Instituto Nacional de Estadística y Geografía - INEGI, 2014). Table 1 shows the number of kilograms produced by this group of Mexican minerals over the last 12 years.

**Table 1.** Mining production expressed in kilograms (kg) for the years 2006, 2010, and 2018 in Mexico

	2006	2010	2018
<b>Gold</b>	38,961.31	79,375.50	141,140.00
<b>Silver</b>	2,969,845.00	4,410,749.00	7,243,250.00
<b>Copper</b>	334,129,000.00	270,136,000.00	677,161,000.15

Source: Own elaboration based on data from, Servicio Geológico Mexicano, SGM. (2007, 2011, and 2019 versions).

Part of these productivity advances in Mexican mining are due to modifications and the use of new mining technologies, mainly open-pit mining, which have allowed the exploitation of large land deposits simultaneously. This shift has led to industrialized mining focused on large-scale metal extraction, incorporating heap leaching and the use of metallurgical technologies with lower costs and higher yields (Cárdenas J., 2013). Open-pit

mining has notable environmental impacts, directly affecting flora, fauna, and constant emissions of gases and dust. Water is the most alarming factor, as the northwestern states where these mega-projects are located have the lowest water availability, less than 30% compared to the rest of the national territory, leading to an uncertain future (Cárdenas J., 2013). This new "large-scale mining, industrial mining, or mega-mining" is not defined in the Mining Law or its regulations; only small and medium capacities are defined. It could be said that mining with a capacity greater than 2,000 tons of daily extraction is mega-mining (Armendáriz, E., 2016), (Mining Law Regulation, art. 9-II). Large mining companies play a fundamental role in achieving the 17 SDGs and significantly reducing CO<sub>2</sub> emissions.

## 2. Economic development goals in the 2030 Agenda: an approach to compliance in Sonoran mining

As mentioned earlier, for descriptive purposes, this article will analyze the characteristics and approaches of the economic sector or economic development within sustainable development (SD), incorporated into the targets of the 17 SDGs, considering data from Sonoran gold mining in the following areas:

- Contribution to the state GDP.
- Annual extractive production.
- Generation of direct employment at the state level.
- Creation of supply chains.
- Number of participating municipalities.

These are incorporated into the achievement of three goals: SDG 8, SDG 9, and SDG 12, defined and developed as follows:

**1. SDG 8: decent work and economic growth:** *this goal aims to create the necessary conditions for sustainable and inclusive economic growth and job creation. It focuses on eliminating child labor, protecting labor rights, and promoting economic growth by guaranteeing opportunities and decent work for all.*

The contribution of Sonoran mining to this goal can be analyzed and measured by various data, one

being the increase in direct employment generation due to the growth of the mining industry in Sonora. Each year, more and better jobs are created; in 2016, the direct workforce was 15,988, and two years later, it exceeded 20,000, with over 80,000 indirect jobs, according to information published by the Secretaría de Economía del Gobierno de Sonora (SE Sonora) in 2019.

Another measure of economic growth is the Gross Domestic Product (GDP), which shows a considerable increase. In 2008, mining contributed 4% to the state GDP, rising to 17% in 2018. For the same year, the extractive volume of gold reached nearly 40,000 kilograms, with a production value slightly over 32,393 million pesos according to SGM figures. This value is also highlighted in an article by the Observatorio de Conflictos Minero de América Latina (OCMAL): "Oro en Sonora: Minas muy ricas, pueblos muy pobres", stating that the kilograms of gold extracted by Sonoran mining projects in 2018 are equivalent in weight to 17.7 Ford F-150 pickup trucks, fully made of solid gold with a purity no less than 98.7% (Gutiérrez F., 2019).

Table 2 shows the increase in direct workforce and GDP contributions at three different time points, based on information from Bracamontes A. et al. (1997) and SGM 2017 for Sonora.

**Table 2.** Economic growth contributed by mining in Sonora in the years 1970, 1990, and 2016.

	1970	1990	2016
State GDP contribution	4.6%	8.7%	17%
Direct labor force	4,266	13,486	15,988

Source: Own elaboration based on data provided by Bracamontes A. (1997), and the 2017 statistical yearbook of the SGM.

Without a doubt, a paradigm shift that reinforces the achievement of this goal is the hiring and participation of women in Sonoran mining. For example, the gold-producing mining unit "La Herradura," located in the municipality of Caborca, had 33 % female labor in its production process in 2018, totaling 266 women (Fresnillo Plc, 2019).

Table 3 lists all the municipalities in Sonora that participated in gold extraction between 2008 and 2018, which gives a clearer idea of the progress in Sonoran mining productivity. The data presented come from the Instituto Nacional de Estadística Geografía (INEGI), the Servicio Geológico Mexicano (SGM), and the Cámara Minera de México

(CAMIMEX), including extraction contributions, production volume in kilograms, and production value.

**Table 3.** Total participation of Sonoran municipalities in gold extraction, total production in kilograms, and production value in thousands of USD (2008-2018).

Year	Total municipalities	Total production in kg	Production value in thousands of USD
2008	9	12,229.60	\$273,938.17
2009	10	14,630.40	\$410,031.98
2010	10	17,561.50	\$549,262.13
2011	10	22,539.10	\$887,484.49
2012	8	27,560.00	\$1,524,916.75
2013	9	30,002.90	\$1,609,763.26
2014	12	35,364.10	\$1,604,294.55
2015	12	34,926.00	\$1,421,127.16
2016	9	49,591.50	\$1,588,593.74
2017	13	47,412.30	\$1,902,392.37
2018	11	42,290.40	\$1,767,582.25

Source: Own elaboration based on SGM and CAMIMEX yearbooks (2008-2018) for Sonora.

Table 4 shows the 13 municipalities that participated in gold extraction in 2019, with a total of 47,412.3 kg.

**Table 4.** Annual contribution by municipality (kg) for 2019.

Municipality	Production in kg
Caborca	20,796.60
Sahuaripa	8,406.90
Altar	6,128.00
Santa Ana	3,125.00
Cucurpe	3,579.00
Banamichi	1,513.00
Cananea	1,439.40
La Colorada	1,147.00
Magdalena	693.10
Álamos	6,218.00
Santa Ana	303.00
Nacozari de García	272.80
Hermosillo	9.10

Source: Own elaboration based on data from SGM 2019 and CAMIMEX 2019 yearbooks.

It can be observed that Caborca is the municipality with the highest share of gold production,

accounting for 44% of the state total. It has three mining units operated by the Fresnillo Plc group. Gold production in this municipality increased from 6,084.60 kg in 2008 to nearly triple that amount in just 10 years. Table 5 presents these values for the 2008–2018 period.

**Table 5.** Gold extraction productivity for the municipality of Caborca, Sonora (2008-2018).

Year	Production in kg
2008	6,084.60
2009	6,810.60
2010	8,115.60
2011	12,446.00
2012	15,314.00
2013	15,160.00
2014	15,322.10
2015	15,532.20
2016	25,257.00
2017	20,796.00
2018	19,293.90

Source: Own elaboration based on data from the CAMIMEX statistical yearbook (2008-2018).. Retrieved from: [https://www.economia.gob.mx/files/comunidad\\_negocios/informacion\\_sectorial/mineria/anuario\\_2009.pdf](https://www.economia.gob.mx/files/comunidad_negocios/informacion_sectorial/mineria/anuario_2009.pdf)

**II. SDG 9: Industry, innovation, and infrastructure**, this goal refers to transportation, water and energy supply infrastructure, technology, and communications—generating dynamic and resilient societies.

The degree to which the mining industry aligns with this goal can be seen primarily in its land access to the main mining unit, “La Herradura.” This mine is the most important at the state and national level, as it is the top gold producer. “La Herradura” is located 120 km northwest of the city, near the municipality of Caborca. There are multiple haulage routes, with the main provider being the Sonoran company Construplan, which holds a 7-year contract to transport more than 3 million tons per month. In addition, 1,500 indirect jobs have been created, tied to local suppliers from the municipality.

In the Manifiesto de Impacto Ambiental (MIA), prepared by the mining group in 2008 for the approval of its expansion, it is noted that water management and studies of surface and underground resources were conducted by the National Water Commission (CNA), the responsible administrative body. The



project, listed as “Cuenca Río Sonoyta 2,” covers an area of 274,340 km<sup>2</sup>, defined as the base for operations. It includes an estimated area of 1,167 hectares, divided into processing plants, transport and haulage roads, leaching pads, explosives warehouses, workshops and fuel stations, offices, and parking lots. Much of the municipality's development is partly due to the contributions from the “Fondo minero” (Fondo para el Desarrollo Regional Sustentable de Estado y Municipios Mineros). Since 2014, economic contributions—amounting to millions of pesos—have been invested as part of efforts to remediate the environmental and social impacts in the region where the mine operates. An example of this is the list of projects approved for the municipality's improvement during the 2019 fiscal year, as shown in Table 6.

To meet SDG 9, the company Fresnillo Plc contributes and complies in the municipality of Caborca through statutes and regulations adapted to modern times and committed to CO<sub>2</sub> reduction. These objectives are published on public-access platforms as part of their move toward sustainable mining:

...“Fresnillo plc is a company dedicated to the exploration,

extraction, and processing of minerals. It is committed to pollution prevention and seeks to ensure a safe and healthy environment for its employees, maintain good relationships with neighboring communities, comply with regulatory and legal requirements, and continuously improve our production processes through an integrated management system. As one of the leading precious metals companies, we strive to carry out all our operations in a sustainable manner. Our goal is to minimize the environmental impact of our operations throughout the entire life cycle of a mine by reducing the use of non-renewable resources and investing in conservation. Environmental stewardship is essential for the social acceptance of mining projects. We continuously monitor performance and management response to environmental challenges. Our operating philosophy is to manage environmental risk and mitigate our impact throughout the life cycle of a mine. The Group's environmental management systems cover the exploration, development, and operation phases of a mine, through to closure and rehabilitation. Throughout our long experience in the mining sector, we have identified five main environmental aspects in which our operations have an impact and thus require control and mitigation:

**Energy:** Reduce unit energy consumption.

**Table 6.** Projects approved by the Fondo Minero for fiscal year 2019. Expressed in Mexican pesos

Road paving improvement and/or rehabilitation	Well rehabilitation/hydraulic infrastructure	Public lighting rehabilitation	Educational infrastructure rehabilitation	Sports units/Gardens rehabilitation
\$2,616,193.00	1,409,398.84	\$6,194,054.93	\$4,145,075.00	\$1,695,308.00
\$8,176,365.00	\$468,173.00	320,991.00		7,931,034.00
\$7,020,116.00	\$2,667,389.00	\$356,822.00		5,387,938.00
\$2,040,162.00	\$881,127.00	\$483,791.00		\$5,679,914.00
\$3,695,384.00	1,701,504.00			\$6,842,878.00
\$5,196,600.00	\$3,334,546.00			33,920,628.00
1,975,624.00				4,551,718.40
\$42,125,439.00				
42,931,366.00				
\$26,290,270.00				
18,759,124.00				
\$42,909,825.00				
\$203,736,468.00	10,462,137.84	\$7,355,658.93	\$4,145,075.00	\$66,009,418.40

Source: Own elaboration based on data from SEDATU, Retrieved from: <https://www.gob.mx/sedatu/acciones-y-programas/fondo-minero-para-el-desarrollo-regional-sustentable>



**Water:** Reduce the unit consumption of freshwater by reusing it.

**Emissions:** Contain dust and minimize CO<sub>2</sub> emissions from indirect energy sources.

**Waste/hazardous materials:** Maximize the reuse rate of hazardous materials and ensure proper containment ...”

They also recently announced on their website that by 2020 and 2021, 40% of the energy used will come from clean energy sources ([www.fresnillo.com](http://www.fresnillo.com))

**III. SDG 12: Responsible consumption and production**, this goal highlights the importance of doing more and better with fewer resources, involving supply chains related to production and consumption worldwide.

IV. One of the mining sector's top priorities today is producing more minerals while using fewer resources. This has been clearly demonstrated in the previous sections, where the annual increase in productivity in Sonora and specifically in the municipality of Caborca has been shown. This growth is supported by the local supply chain, developed through the

efforts of Sonoran suppliers. These supply chains have been organized, certified, and integrated since 2014 into the Clúster Minero. At its inception, the cluster included 105 local and national suppliers; by 2019, that number had grown to 149 suppliers. Some of the current challenges faced by mining suppliers can be outlined in Illustration 2.

And this supply chain must support the constant and growing demand for minerals, due to their incorporation into various production processes. However, these advances and demands must now be aligned to achieve a low-carbon future by modifying current energy production and consumption patterns. This marks a starting point for mining companies seeking to harmonize their operations with the Sustainable Development Goals (SDGs), linking social inclusion, environmental sustainability, and economic development.

Another very important element that contributes to the achievement of this goal is the “Empresa Socialmente Responsable” (ESR) award, which has been granted to the Fresnillo Plc Group for more than 16 consecutive years by the Centro Mexicano

**Illustration 2.** Current challenges for companies regarding the supply chain



Source: “Liderazgo y diferenciación en la cadena de suministros” Retrieved from: <https://www.esan.edu.pe/conexion/actualidad/2017/07/17/liderazgo-y-diferenciacion-en-la-cadena-de-suministros/> Retrieved on September 18th, 2019.





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## Conclusions

Mining, from an analytical and economic perspective, has enabled the development of economic tools for preventing and addressing environmental impacts, thereby reducing the degradation caused by this productive activity. Since these impacts arise from production processes and the consumption of goods, it is necessary to balance environmental, economic, and social objectives. (Charles K, 2001). This much-needed balance for mitigating externalities is supported by various indicators, which are analyzed and presented from the perspective of environmental economics. These efforts align with the United Nations agreements reflected in the 2030 Agenda, which acknowledges the important role of mining in achieving these goals—particularly those aimed at reducing the carbon footprint, the water footprint, among others.

The challenge Mexico and our state face in meeting the 17 SDGs in the mining sector is becoming increasingly complex. Efforts must be intensified to promote greater participation and dialogue with other industrial sectors, governments, educational institutions, and local communities where mining operations are established. Several issues remain unresolved, such as: harmonizing mining income taxes due to recent changes in the management of the Mining Fund by the federal government. This fund should also be used to stimulate the local economy by integrating extracted minerals into local production chains. Another pending task for mining in Sonora is obtaining reliable data on greenhouse gas emissions generated by mining industries, to develop accurate scenarios and provide solutions for reducing the carbon footprint caused by fossil fuel consumption.

Efforts should be directed toward achieving economic, environmental, and social development from the local to the national level, ensuring that the taxes generated by mining companies truly benefit mining communities in Sonora by fostering sustainable communities across all three spheres of sustainable development. As resource allocation becomes more decentralized and professionalized, it will be possible to establish stable, professional groups that serve as neutral spaces for dialogue,

conflict resolution, and resource distribution—resources generated by taxes aimed at mitigating the externalities caused by Sonora's mining sector, which are so urgently needed.

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