

Mining and Tourism Landscapes: Zacatecas and Quintana Roo cases of study

Paysages miniers et touristiques : cas d'étude de Zacatecas et Quintana Roo

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ABSTRACT: The geographic space is undoubtedly the place where human beings develop the activities they need to live within a society. In this sense, it can be focused from the concept of landscape, which is perceived as the visible and perceptible aspect of space, for this, there must be an observer who notices and analyzes what happens in a certain space. The objective of this research is to analyze the landscape of two states, Zacatecas and Quintana Roo, where mining and tourism activities are practiced. The methodology is based on qualitative characteristics and a bibliographic review that allow for understanding the behavior of these landscapes as well as their processes, trends and challenges to overcome.

KEY WORDS: landscape, mining, tourism.

RÉSUMÉ : Sans aucune doute, l'espace géographique est le lieu où l'homme développe les activités nécessaires pour vivre au sein d'une société. Dans ce cas, il peut aborder le concept de paysage qui est perçu comme l'aspect visible et perceptible de l'espace, c'est la raison pour laquelle, il doit exister un observateur qui contemple et analyse qu'est ce qui passe dans un espace déterminé. Par conséquent, l'objectif de cette recherche est d'analyser le paysage de deux états, Zacatecas et Quintana Roo, qui fassent des activités minières et touristiques et aussi de déterminer comment différents paysages émergent de mouvements divers. a méthodologie à des caractéristiques qualitatives et une étude bibliographique qui permet comprendre le comportement de ces paysages, ainsi on peut comprendre leurs processus, tendances et défis à relever.

MOTS CLÉS : paysage, minière, tourisme.

1. Introduction

In the mid-15th century, in what is now Belgium, the term "landscape" emerged, which began to develop as a space with boundaries and an administrative unit. According to Relph (1981), it was not until the 20th century that it became an academic term, and the foundations for the current definition of landscape were established: understood as a portion of land or territory that can be comprehended in a single glance, including all the objects, especially in their pictorial aspect" (Gregory, 2000). In this sense, natural elements are included, such as mountains, forests, rivers, clouds, among others, in combination with human actions: human settlements, roads, buildings, economic activities, and others. This level of analysis is focused on the visible, as cited in Delgado (2005: 59).

The way in which the term "landscape" has been developed over time allows us to infer that its content is complex, variable, and therefore the subject of study in various disciplines, including history, geography, archaeology, anthropology, to mention a few. For example, much of the work carried out in historical geography is related to the description and explanation of the visible content of the landscape, with regional contrasts, patterns of colonization, as well as the rural and industrial, forms of villages and towns, architectural styles, the character of borders, among others (Roberts, 1987), cited in Delgado (2005: 60).

It can currently be stated that the landscape results from the interaction between the physical part of the territory and its social construction. Therefore, identifying the local causes of transformation in a landscape allows to recognize the dynamic correlation between the spatial bio-physical structure and the social process (Galicia, 2016:83).

For this research, the concepts of a mining landscape and a tourist landscape are considered, with very different characteristics, but reaching the conclusion that both are referred to as industrial landscapes, which make use of nature in order to build the social environment, resulting in the imposition of man upon the environment.

It is important to note that mining landscapes, in comparison to tourist landscapes, have a long history, as they were among the first economic activities to develop within the country. On the other hand, tourism activities gained importance in the 1990s, with the aim of shifting human activities, always considering the transformation of the landscape with the goal of benefiting society through job creation, but at the same time generating pollution and environmental damage.

Mining and tourism both stem from a natural landscape, which contains a large number of resources that are attractive for social processes. Generally, mining landscapes have low population densities, are distant from communities, and have an unremarkable view, but they contain a wealth of metallic and non-metallic mineral resources. In contrast, the landscape of tourism is appealing, figuratively "beautiful," usually with a large number of inhabitants, which is attractive to tourists who seek to rest, relax, and enjoy it. According to Trinca (2006), the natural landscape is one that has not been modified by human activity, and it forms part of the (man – nature) relationship that geography has studied over the years.

2. Study area

Mexico has an area of 1,972,550 km², which includes forests, jungles, deserts, and other types of ecosystems. It is rich in different climates and altitudes that allow for the diversification of economic activities. According to INEGI, in 2020 the total population of Mexico was 126,014,024 inhabitants.

In the country, various economic activities are carried out with the aim of obtaining food, consumption products, goods, and services, all to satisfy the needs of society. These include primary, secondary, and tertiary activities. Mining is the economic activity in the primary sector responsible for the extraction, exploitation, and utilization of metallic and non-metallic minerals. On the other hand, tourism is an economic activity in the tertiary sector that provides services to tourists who wish to rest, that is, to travel from their place of origin.

For this research, the state of Zacatecas is analyzed, which according to CONACULTA (2025) is considered one of the ten Mexican cities distinguished as a World Heritage Site by UNESCO, due to its valuable colonial culture that makes it attractive to tourists. Its isolation from other colonial cities allowed this city, founded in 1546, to become one of the best-preserved cities on the entire continent.

According to INEGI (2020), the state of Zacatecas has an area of 75,275.3 km², which represents 3.8% of the total surface area of the country. 73% of the region has a dry and semi-dry climate, which is a limitation for agriculture, which is why irrigation farming is practiced, primarily growing corn, sorghum, beans, chili, among others. As for the relief, it forms part of the Eastern and Western Sierra Madre.

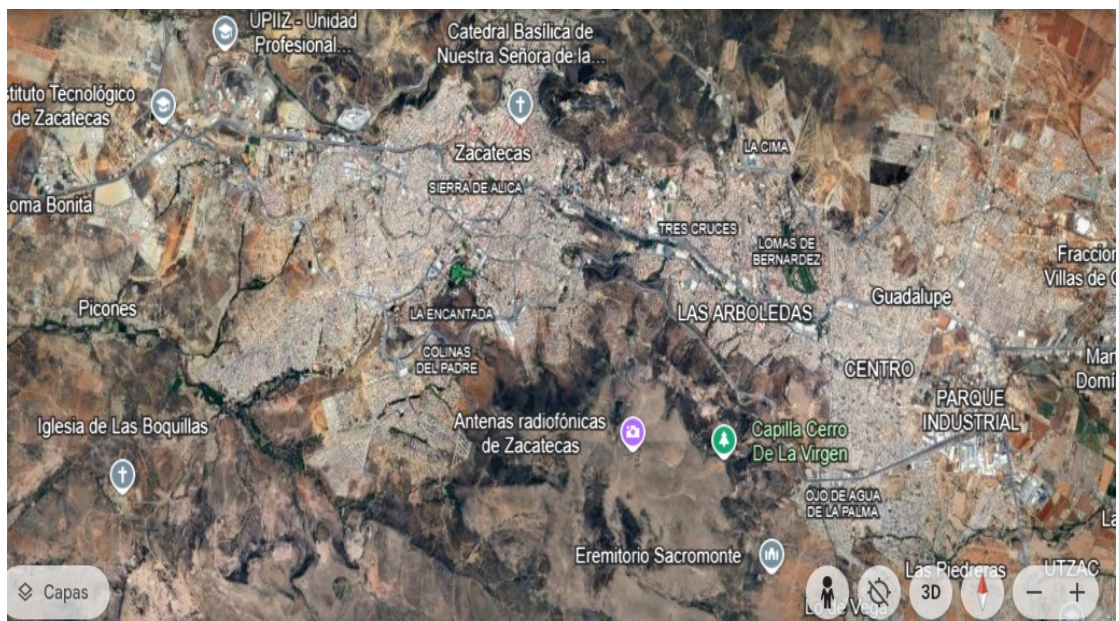


Figure 1 Study zone (Zacatecas) seen from a satellite image, Google Earth, 2024.

In 2020, the population of Zacatecas was 1,622,138 inhabitants, with 48.8% men and 51.2% women. Over the course of ten years, the population grew by 8.82% compared to 2010 (Government of Mexico, 2024).

To talk about a mining landscape, which is transformed by human activity, the historical aspect must be considered, which becomes important in 1550 when there was a record of 155 mines, and in the same year, the capital of the state was established. On the other hand, it is important to note that from that time until 1880, 70% of the silver obtained within the state was produced by the patio process, which was implemented by Bartolomé de Medina in 1557. This process, known as amalgamation, applied to gold and silver ores, and it completely revolutionized the systems used in the beneficiation of these minerals.

During these years, the mining landscape of Zacatecas began to manifest environmental changes because this method used mercury, sodium chloride, and copper sulfate, which generated hazardous waste. At that time, 35 processing haciendas operated using this method. Langué (1991) mentions that by the end of the 18th century, large mining companies were established within the mining process, in parallel with the reforms carried out by the Spanish Crown in this area of the economy. In this way, mining companies functioned as true economic and social units, and their owners not only had mines and processing haciendas, but also ranches or cattle estates intended to supply the first (Institute of Legislative Research of the State of Zacatecas, 2019: 17).

The modern mining landscape in Zacatecas experienced an innovation in the municipality of Fresnillo, which refers to a processing plant using the cyanidation system, concentrating minerals such as gold and silver. In this case, the change in the landscape due to this activity is still noticeable. In 1932, many small mines were closed, and an instability began for the traditional mining activity in the entire region, a period that lasted 30 years until World War II. Afterward, exploitation in mining centers increased as a result of the extraction of new minerals, such as mercury, whose exploitation led to the settlement of new population groups (Institute of Legislative Research of the State of Zacatecas, 2019: 18).

In 1980, the great mining landscape emerged within Zacatecas, which consisted of significant investments, primarily foreign capital, aimed at developing projects that contributed to making Zacatecas the leading silver producer in the national context. Since then, the activity experienced significant technological advancements in its extraction processes alongside a major political change in Mexico: the reform of Article 27 of the Constitution, which allowed access to land, water, and land use, previously owned by the nation, thus promoting a shift in mining legislation. At that time, it became easier to grant concessions, large reserves and mining operations were separated, and the requirement of fifty-one percent national capital in mining projects was eliminated, among other reforms (Institute of Legislative Research of the State of Zacatecas, 2019: 18)

All of the above facilitated the entry of foreign investment and the emergence of large Mexican mining companies, with the aim of obtaining a significant amount of minerals in the shortest possible time, using labor from the population centers near the mineral deposits.

Continuing with the history of the mining landscape of Zacatecas, in 2017 the state contributed 19.31 percent of the total value of national mineral production, becoming the second state with the highest contribution. To begin with, the state capital is 80 percent licensed to mining companies.

Furthermore, a quarter of the Zacatecas territory (around 1,803,200 hectares) reflects a desolate landscape due to the exposure to mining companies through 2,296 concession titles, which today represent 206 exploration projects, of which only 145 are Mexican-owned (34 from Grupo Peñoles, 12 from Frisco, and 11 from Grupo México); 42 are from Canadian companies (8 from Pan American Silver, four from Teck Cominco, three from Mag Silver Corp, two from Goldcorp, and two from First

Majestic); 10 are from U.S. companies (all from Golden Minerals Company); and 6 are from British companies (two from Río Tinto and two from Arian Silver Corporation). Currently, 15 mines are in operation (three open-pit) and several more are about to begin operations (Institute of Legislative Research of the State of Zacatecas, 2019: 22). Within this landscape, which is being transformed by human activity, no economic benefits are seen within the population centers. On the contrary, significant environmental problems are visible, such as soil erosion, water contamination, deforestation, and air quality issues, to name a few, resulting in landscapes filled with uncertainty and degradation.

For this research, a tourist landscape is included, which, like the mining landscape, is transformed by humans with the aim of obtaining economic and social benefits. This refers to the state of Quintana Roo, which, according to INEGI (2020), has an area of 44,705.2 km², representing 2.3% of the total surface area of the country. The climate is warm and subhumid in 99% of its territory, with an average annual temperature of 26 degrees Celsius and an average annual precipitation of 1,300 mm. The state's surface is part of the Yucatán Peninsula province.

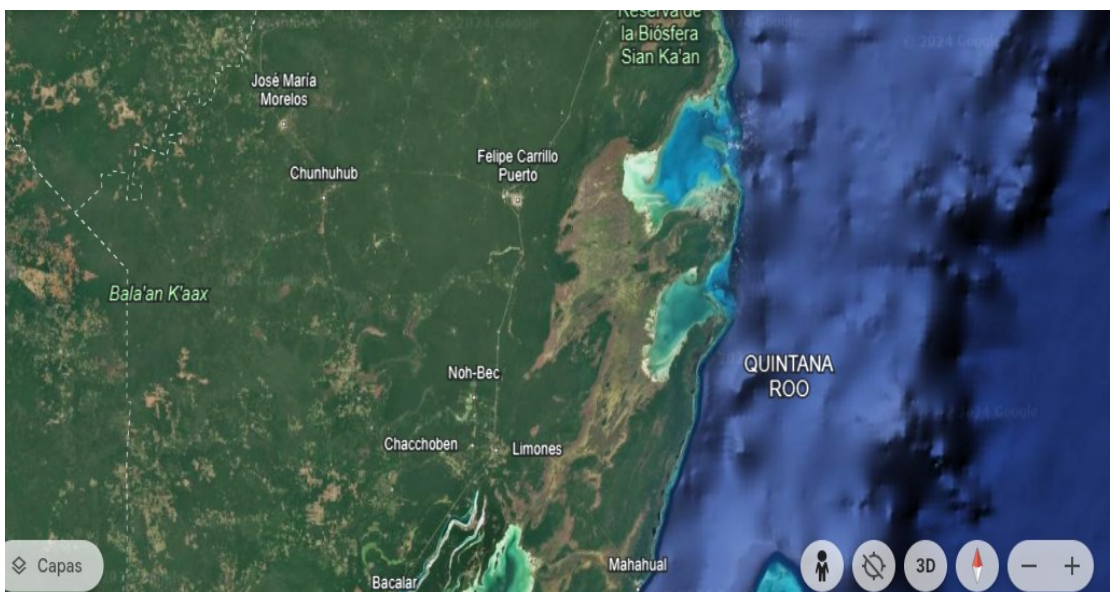


Figure 2 Study zone (Quintana Roo) seen from a satellite image, Google Earth, 2024.

According to INEGI (2020), the population of Quintana Roo was 1,857,985 inhabitants, ranking 24th nationally. On the other hand, 86% of its population is engaged in tertiary activities, which is where the tourist landscape comes into play.

In agricultural matters, the state previously mentioned produced the least amount of corn in the entire country. According to César and Arnaiz (1998), at that time, there was a strong regional crisis due to the excessive use of natural resources such as fine woods, chicle, and henequen, which were produced in the region. This created a complex situation that could lead to a social problem. For this reason, the government took steps to promote and encourage tourism in this state, with the aim of alleviating the social tension caused by the agricultural situation, paving the way for the tourist landscape in Quintana Roo. Over the years, it has become one of the most important tourist centers in the country.

Despite the disadvantages of reaching this area of the country, due to its distance from major population centers such as Mexico City, Chetumal, and Mérida, among others, as well as poor

communication, an airport with limited infrastructure, and a shortage of labor, the idea that Cancun could become a tourist development hub was never abandoned. It was in 1970 when this project officially began.

Before these years, Cancun was a pristine landscape with no inhabitants, only the presence of natural resources. However, the Bank of Mexico, along with some entrepreneurs, supported the creation of this center, which today is the leading tourist destination in Mexico and Latin America, according to the Tourism Promotion Council. Many things have changed since then, such as the number of inhabitants, infrastructure, and the availability of natural resources.

The Cancun tourist project was consolidated in three phases. The first phase involved the construction of a tourist landscape with no residential areas, only hotel facilities and golf courses. The second phase was the creation of a residential area for the population, meaning a space with services such as water, electricity, drainage, basic schools, hospitals, and markets to purchase essential goods. The third phase was to have an international airport that would make it possible for international tourism to arrive, seeking an attractive landscape with natural resources to enjoy a few days of rest (Chávez, 2008).

Along time, this tourist center became more established, and between 1983 and 1988, Cancun had twelve thousand hotel rooms and an urban population of over twenty thousand inhabitants, making it the most populated city in the state. It also became a tourist landscape with environmental problems that were already visible, such as water pollution, deforestation of certain areas for the construction of housing complexes, to name a few.

In 1988, the tourist center was devastated by Hurricane Gilbert, it is when the idea of the "Mayan World" emerged to help boost the region again and highlight the natural and cultural features of the state.

Currently, Quintana Roo is the entity with the highest growth in terms of tourism, with Cancun and the Riviera Maya being the most important areas due to the infrastructure and services they offer.

In 2004, Mexico ranked eighth in international tourist arrivals with a total of 20.6 million, of which 24% corresponds to the aforementioned state (Chávez, 2008).

The economic life of the state largely depends on tourism. In 2010, according to INEGI, the Gross Domestic Product was distributed as follows: primary sector, 1.1%; secondary sector, 11%; and tertiary sector, 87.9%. With the development of the tourism industry, Cancun was transformed into a major urban center, where inhabitants from rural areas, other states, or countries reside in order to work within the hotel zone. From its origins, it was evident how a landscape with marked social divisions was forming, as there is high-quality infrastructure in the hotel zone and lower-quality infrastructure in the areas where low-income populations reside. Therefore, the Integrated Planning Center did not take into account the entire population and excluded the less privileged social strata within the economic system reflected in this tourist landscape. Several scholars have stated that the arrival of labor and the local population created a precarious settlement center, which for many years would not be regularized, and to this day, it has spiraled out of control.

3. Methods

The present research aims to analyze two very different economic activities, one belongs to the primary sector (mining), considering what happens in the state of Zacatecas as one of the most representative states at the national level with this activity; and the other, to the tertiary sector (tourism) in the state of Quintana Roo. It is worth mentioning that the reason why these activities

were chosen is because they generate the most economic capital for the country using different natural resources; all of the above, with the aim of understanding their behavior in the space, their history, the consumption of natural resources and how they benefit the resident population and the environmental degradation they generate.

For this study, spaces with natural resources were identified and fields of confrontation were formed around them, the actors and capitals at stake were recognized, as well as the way of appropriating the space and everything in it. Under this premise, confrontation over space raises the need to establish a difference among those who have greater economic, political, social and even cultural capital to appropriate the space with mining and tourism potential.

There are those who, by putting their capital "at stake", establish strategies such as buying and selling in the cases of tourism and leasing for mining; in both cases the objective is to have control and impose certain ways of using space and strategic natural resources for the development of the country's economy.

Official documentary information was used, such as INEGI censuses, data from the Ministry of Tourism and the official website of the federal government, to obtain data on the mining and tourism panorama in Mexico as well as personal documents such as: books, articles, thesis and pieces of news. These were used to compare the two very different economic activities mentioned, but with great economic profits.

4. Results and discussion

The concept of a natural landscape transformed by humans is something dynamic and changing according to time, space, and economic activity. In the case of this research, both mining and tourism have generated very contrasting landscapes, with the goal of generating economic benefits. For example, when land is privatized, a new face of the landscape is created, where large multinational companies carry out both activities, transforming the way of life in a population in terms of its traditions, customs, and way of working. This results in environmental damage such as water, soil, and air pollution, erosion, deforestation, and the deposition of tailings in the case of mining. In many instances, these natural landscapes, which originally gave life to the mentioned states, are not recovered.

The state promotes development benefits within mining and tourism, where they make people trust the companies and sell their land; the inhabitants looking for another place to live, with the hope of having better opportunities, in another scenario they only act as labor.

In Mexico, the development of mining and tourism accelerated the process of land appropriation and, at the same time, the liberalization of space by the Mexican State, encouraging the intervention of various actors (local entrepreneurs, transnational mining companies and hotel chains), who, interested in the vast mining and tourism potential, had to confront each other and the interests of the local population to induce ways of exploiting space and natural resources.

For mining and tourism capital, the monopoly of space and natural resources is not enough; it is also necessary to monopolize labor to transform the landscape. However, this was a fundamental piece in the formation of the landscapes of inequality, exclusion and poverty that were deployed after mining and tourism development.

The homogenization of the landscape goes beyond the physical aspect, the appropriation and valorization of space by these actors has led to the expansion of mass tourism which, although presumed to be sustainable, has produced the refunctionalization and imposition of new models of

socio-spatial reorganization that have fragmented the landscape; on the one hand, there are tourist landscapes that mostly project the idea of modernity due to their strong content of fiction, illusion and hyperreality and, on the other, the landscape of inequality and exclusion that has made the configuration of tourist landscapes possible.

The same thing happens with mining activity. Transnational companies arrive with the idea of improving the population's quality of life, but unfortunately, when they stop obtaining minerals, they leave the area, leaving abandoned landscapes full of tailings waste, with high pollution, and the population looking for better life opportunities.

The mining and tourism institutions and companies that currently have a significant hold on the economic, political and social scene have been imposing what, when, where, how and who can incorporate certain objects, uses and forms of communication on those spaces of everyday life that have acquired value from an economic point of view and on those that indirectly, serve the activity. The model under which mining and tourism have been developed responds to the interests of the ruling class, who, using public policies on urban planning and image, as well as those related to the conservation of the natural environment, have designed a set of instruments, regulations and standards that act as strategies and control mechanisms over those living spaces that, given the economic restructuring, have become functional to these activities.

Everyday life is being taken over by mining and tourism companies; capital continues to be incorporated more and more into the daily life of the population. Living spaces are apparently becoming new scenarios that, through consumption, are being integrated into the sphere of production, thus becoming part of this alienation created by both activities.

It can be observed that the activities analyzed in this study bring new patterns of behavior in daily life and, consequently, transformations in the spaces. These have been progressively built throughout the development of tourism and, because of the orientations of the tourist institutions and companies, have managed to impose certain logics that constitute peculiar ways of life. The regulations, standards and, in general, instruments created by the State to contribute to conservation have helped significantly to the "physical and social cleanliness" of everyday spaces, which have been accompanied by the homogenization and fragmentation of the landscape.

Undoubtedly, the development of these activities facilitates the production of a capitalist space, which is strengthened every day, achieving an economic benefit in the places where it manifests itself, and leaving aside natural resources and human beings, who only act as labor.

5. Conclusion

Studying the concept of landscape from various perspectives is complex, especially if it is analyzed from the perspective of very different economic activities, which result in considerable transformations. To do this, it must be understood that, for geographical terms, the landscape is understood as any part of the territory, as it is perceived by the population, whose character is the consequence of the action and interaction of natural or human factors.

This research shows two clear examples to precise in this concept; on the one hand, the state of Zacatecas is one of the main producers of minerals within the country, it has an important value in the world market, its activity began since the colonial era and over time the interaction between natural resources (minerals) and human (labor) has been seen, with the final purpose of obtaining an economic benefit, time being witness to the transformations the landscape has in this place.

On the other hand, a landscape that is dedicated to tourist activities in the state of Quintana Roo, this being one of the most important with this diligence in the whole country. Previously, it was dedicated to agricultural activities, but once they were not profitable, the landscape took a total turn by being a place of services, where the interaction between natural and human resources take risk. The main objective in this type of landscapes is to satisfy the needs of the tourist who looks for rest and leisure. For many years, these transformations have been manifested and it is not known to what extent this landscape will change, the only thing that is certain, is that the changes are irremediable and many of these are made without thinking about the damage to the ecosystems.

Landscapes are complex, full of factors and actors that determine the way of life in each territory. These must be studied closely, and compared, based on their different economic activities to see how these will always be in relation to human beings, in order to satisfy their needs.

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