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Sierra Gorda Biosphere Reserve, Querétaro, Mexico: An Example of Sustainable Tourism

Ana-Karen HUERTA-MENDOZA

Universidad Nacional Autónoma de México, México

Karen.1392@hotmail.com

Laura FISCHER

Universidad Nacional Autónoma de México, México

lfischer@fca.unam.mx

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Abstract

The importance of tourism in the economy and development, from countries worldwide and specifically to Mexico, makes it increasingly necessary to carry out tourism activities and create sustainable policies that reduce the impacts of the mass movement of tourists. The work aims to present the different actions carried out in the Sierra Gorda Biosphere Reserve, Querétaro, Mexico that allow it to offer ecotourism activities and develop sustainable projects, which benefit the surrounding communities and allows the tourist a low impact approach with nature. Promoting a sustainable entrepreneurship model by consolidating economic development with biodiversity conservation

Keywords: biosphere reserve; sustainable tourism; ecotourism.

JEL Classification: Q57; Q01; Z32.

Introduction

Tourism is considered one of the main economic activities, contributing to 10.4% of global GDP (Gross Domestic Product), generating one in 10 jobs in the world and contributing 7% of world exports (Secretaría de Turismo 2017. Turismo Sostenible, Modelo Para Crear Destinos Turísticos Con Visión Social Y Respeto A Biodiversidad). For Mexico, tourism is a major part of the national economy, its various destinations attracting a large number of domestic and international tourists each year, helping to improve the domestic economy through foreign exchange income and GDP growth; based on information from the National Institute of Statistics and Geography (INEGI (Instituto Nacional de Estadística y Geografía). 2019. Producto Interno Bruto turístico. <https://www.inegi.org.mx/temas/turismosat/>), the share of tourism GDP in 2018 reached 8.7%, above countries such as Sweden with 2.6% and New Zealand with a 6.1 share. For its part, the Ministry of Tourism (SECTUR) states that during 2018, Mexico ranked seventh in the world ranking, receiving 41.4 million tourists and 16th place in foreign exchange, entering a total of \$22.5 million (DATATUR. 2019. Ranking mundial de turismo internacional. Secretaría de Turismo).

Based on the increases in global and national tourism, and its importance in the economy and development, tourism activities and the creation of sustainable policies are increasingly needed to reduce the impacts of the massive movement of tourists around the world, Sustainable Tourism is an activity that shows an increase in the number of travelers worldwide, according to data from the ATTA (Adventure Travel Trade Association) and George Washington University, sustainable tourism represents a \$263 billion market with growth of 65% over the past five years (Tejeda 2017).

1. Sustainable tourism

For Kotler, *et al.* (2011) sustainable tourism is a "concept of tourism management that anticipates and prevents problems that may arise when the reception capacity of a certain geographical area is exceeded" (p.660), it is necessary to analyze the above definition, as it refers to a tourist management that only seeks to avoid excess load capacity in a given area or destination, however, sustainable tourism seeks to improve, conserve and protect internal conditions (such as host capacity), as well as to benefit socially and economically all actors involved in its development: localities, visitors and hosts.

By contrast, the first definition of tourism in sustainable development proposed in 1993 by UNWTO suggests that the needs of tourists and communities should be met, while protecting and fostering future opportunities, in order to meet economic, social and aesthetic needs; respecting cultural integration, ecological processes and biodiversity (World Tourism Organization (2005), UNWTO Tourism Highlights). The integration of sustainability into tourism implies a constant and long-term evaluation, seeking to conserve the resources of the environment, improving future conditions and promoting the continuous development of the surrounding communities, adopting preventive and corrective policies and measures.

In this regard, Pérez de las Heras mentions that tourism has strong interference in the three dimensions of sustainability, not only with regard to the environmental; of the main benefits that tourism brings to the dimensions of sustainability are: jobs (direct and indirect), foreign exchange entry, stimulation for the creation of new companies, diversification of economic activity, economic development of the region, tourism planning and aid to the conservation of natural and cultural heritage (Pérez de las Heras 2012).

Sustainable tourism presents subdivisions, which focus on different recreational activities or objectives and can be directed to a specific segment of the tourism market, as shown in Table 1.

Table 1. Types of sustainable tourism

Type	Description
Green or nature tourism	The main goal is to visit natural spaces with not Or almost nothing humanized.
Ecotourism or ecological tourism	Aims to visit protected natural areas and get to know their Ecosystems.
Rural tourism	Tourism in order to visit rural areas.
Agrotourism	Hospitality that under payment is offered by individual agricultural enterprises.
Sports tourism	Aims to practice outdoor sports.
Adventure tourism	Its main objective is the practice of some sport with some risk
Cultural tourism	Its aim is to visit historical, architectural, artistic and cultural resources ethnic groups in the area.

Source: Ayuso, quoted by Blanco y De Esteban 2016, 131

1.1 Ecotourism

Ecotourism is a variant of sustainable tourism, as an alternative to mass tourism and ensuring a strategy for sustainable development, so in 2002, the UN declared the international year of ecotourism. Of the various tourist segments, ecotourism is considered the only one that contains the three dimensions of sustainability since its definition, so ecotourism, has as its main objective to enjoy natural resources, but supporting the community in a social and economic way (Pérez de las Heras 2012).

Ecotourism must be especially sustainable, as it is practiced in places that are generally protected spaces; that are why the International Society of Ecotourism (TIES) defines it as "responsible travel to natural areas, which preserves the environment and supports the well-being of the local population." (The International Ecotourism Society. 2015. What is ecotourism?)

Ecotourism is not only about visiting territories with scenic beauty and escaping routine, but also involves a way of making conscious tourism, because according to the Secretary of Tourism (Secretaría de Turismo. 2011. Programa de Turismo Sustentable en México. Obtenido de Dirección General de Planeación Estratégica y Política Sectorial) it is an approach to tourist activities in which sustainability, preservation, appreciation of the natural and cultural environment are exercised, and which generate awareness and sensitivity on the part of visitors SECTUR also sees ecotourism as a tourist product aimed at visitors who enjoy natural history and wish to

actively support and participate in the conservation of the environment (Secretaría de Turismo. 2005. *Compendio de estadísticas ambientales 2009*. Obtenido de Dirección General de Desarrollo de Productos Turísticos).

1.2 Ecological Reserves

The International Union for Conservation of Nature (IUCN), a global authority on nature conservation and the measures necessary to safeguard it, developed a preliminary system of categories of management of protected areas according to their characteristics, in order to generalize the understanding of these areas internationally (UICN (Unión Internacional para la Conservación de la Naturaleza). 2019. Categorías de manejo de áreas protegidas de UICN).

Mexico maintains the same classification proposed by the IUCN, although with slight variations based on the General Law on Balance and Environmental Protection (LGEEPA), the Mexican conservation system consists of eight categories (Secretaría de Medio Ambiente y Recursos Naturales. 2010. Áreas naturales protegidas). The basis of the categorization of management of Protected Natural Areas has allowed to conceptualize and better understand each of them, enabling sustainable tourism activities, such as ecotourism, in order to merge an environmental education and sustainable development that has a minor (or no) impact on the resources and ecosystems that inhabit them (Secretaría del Medio Ambiente. 2018. Ecotecnias).

One of the categories of management is the Biosphere Reserve (RB) defined as nationally relevant biogeographical areas, representative of one or more ecosystems not significantly altered by human action or that require preservation and restoration, in which representative species of national biodiversity live, including those considered endemic, threatened or endangered (Secretaría de Medio Ambiente y Recursos Naturales. 2010. Áreas naturales protegidas).

Currently, Mexico has 44 areas under this category, covering more than 62 million hectares, thus being the category with the largest protected area and the second in number of protected areas, followed by national parks. Among the best known Biosphere Reserves are: Sian Ka'an Reefs, Calakmul, Grand Altar Desert, Monarch Butterfly, among others (Secretaría de Medio Ambiente y Recursos Naturales, 2018. Reserva de la Biosfera, áreas que se preservan, se disfrutan y se aprovechan sustentablemente).

In the 1970s, UNESCO (United Nations Educational, Scientific and Cultural Organization) promoted the creation and protection of Biosphere Reserves through the 'Man and the Biosphere' (MaB) programme, with the main objective of integrating human communities into conservation rather than excluding them and enhancing their functioning (Biodiversidad Mexicana. 2020. Áreas Protegidas).

To be designated a UNESCO Biosphere Reserve, three functions must be fulfilled (Schaaf 1999).

1. Conservation of landscapes, ecosystems and species;
2. Development, promoting socio-culturally and ecologically sustainable economic and human development;
3. Logistics support in demonstration services, education, research and training on the environment and ongoing observation on local, regional, national and global conservation and sustainable development issues.

The MaB Programme lays the foundations of the natural and social sciences for the rational and sustainable use and conservation of biosphere resources, as well as the improvement in the relationship between the environment and people; this program searches for (UNESCO. 2019. Programa sobre el Hombre y la Biosfera):

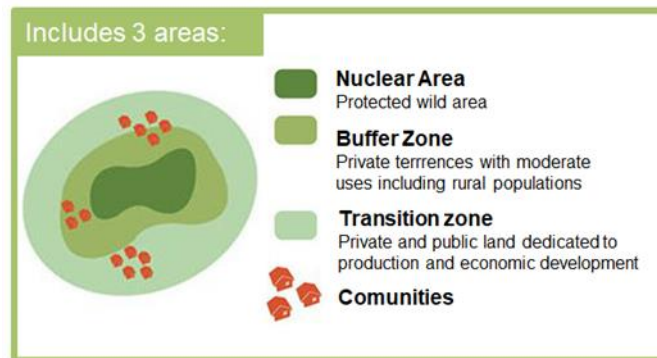
- Identify and evaluate changes in the biosphere resulting from human and natural activities, as well as the effects in the context of climate change;
- Study and compare the dynamic relationships between natural ecosystems and socio-economic processes, especially on the accelerated loss of biological and cultural biodiversity that affect the ability of ecosystems to continue providing essential services;
- Ensure basic human well-being and a living environment;
- Promote knowledge sharing on environmental solutions and promote environmental education for sustainable development.

In order to perform these functions, a biosphere reserve needs a certain zoning (SINAC (Sistema Nacional de áreas de conservación Costa Rica). S.f. Reservas de la Biosfera):

- Core area, composed of a strictly protected ecosystem, and contributing to the conservation of landscapes, ecosystems, species and genetic variations;
- Buffer zone, which surrounds the core and where activities compatible with sound ecological practices are carried out that can contribute to research, monitoring, training and scientific education;

- Transition zone, the reserve strip where a greater number of activities are authorized to promote socially, culturally and ecologically sustainable economic and human development.

Figure1. Zoning of a Biosphere Reserve



Source: National System of Conservation Areas, Costa Rica, s/f.

Especially in buffer and transition zones, local communities, non-governmental organizations, scientists and other stakeholders work together and the administration and sustainable development of this area. Alternative activities that are compatible with conservation objectives, such as ecotourism, can also be carried out in buffer zones (Magio and Velarde 2019).

Some of Mexico's Biosphere Reserves have been distinguished by UNESCO's MaB Program, being a clear example of the planet's biodiversity and how man can inhabit it sustainably. Currently, 42 Biosphere Reserves have been incorporated into the Global Network, including 51 federal protected natural areas (CONANP. 2018. 100 años de Conservación en México 1917-2017. Áreas Naturales Protegidas. México: SEMARNAT-CONANP).

1.3 Ecotourism in Biosphere Reserves

Mexico is considered one of 17 megadiverse countries, as it is part of the group of nations with almost 70% of the world's species diversity; to be megadiverse, the country must have at least 5,000 endemic species of plants, diversity of species and ecosystems, including marine ecosystems and rainforests (Biodiversidad Mexicana1. 2020. México Megadiverso).

In the country there are about 30,000 species of plants, of which 6,000 of them are endemic; In addition, it is habitat for 439 species of mammals, 1, 040 species of birds, 957 species of reptiles, 526 of them endemic and 2, 500 species of butterflies. Adding cultural heritage, Mexico has a lot of attributes to position itself in international markets. However, only a small part of this potential is exploited as the greatest supply and demand is located in resorts in the Pacific and Caribbean and the main cities of the country (Brenner 2006).

Of Mexico's 182 protected natural areas today, at least 89 of them have a tourist vocation. According to the National Commission on Protected Natural Areas (CONANP), tourism within protected areas contributes to the care and conservation of biodiversity, helps to generate economic resources for local communities and brings significant value to the natural elements of the area, without modifying or endangering the environment (Secretaría de Turismo. 2005. *Compendio de estadísticas ambientales 2009*. Obtenido de Dirección General de Desarrollo de Productos Turísticos).

A 2019 study to assess ecotourism conservation practices and attitudes showed that ecotourism brings direct and indirect benefits to biosphere reserves, such as giving courses and workshops with the participation of various stakeholders to promote environmental knowledge is a direct benefit; on the contrary, the participation of local communities in tourism activities and the distribution of income that determine positive attitudes and practices towards the environment is considered an indirect benefit (Magio and Velarde 2019).

Precisely, ecotourism integrates the local population, being one of its main elements and thus establishes a link between this type of tourism and the biosphere reserves, since both aims to revitalize the economy of the receiving areas and generate value of natural and cultural attractions (including customs and traditions of the site) (Puertas 2006).

For this reason, activities and tourist experiences other than traditional ones must be compatible with the environment, with nature being the main factor; tourists have great importance in achieving the economic, social and environmental development of these spaces, as ecotourists are distinguished by their motivation, education, participation and behavior within the biosphere reserves (Puertas 2006).

2. Sierra Gorda Biosphere Reserve

According to the National Council of Science and Technology (CONACYT) (CONACYT. 2019. Áreas naturales protegidas del estado de Querétaro), the state of Querétaro has 13 natural areas protected under the State Law on Environmental Protection for the Sustainable Development of the State of Querétaro (LPADSEQ), which cover 36.3% of the total area of the entity, and equivalent to 425,040.16 hectares.

The Sierra Gorda Biosphere Reserve (RBSG) is a protected natural area covering one third of the state of Querétaro, located in the municipalities of Arroyo Seco, Jalpan de Serra, Peñamiller, Pinal De Amoles and Landa de Matamoros, as shown in Figure 2. Within it live several endangered species and there are hydrological resources of great value, distributed in three subcuencas. It is the seventh largest reserve in Mexico including maritime areas and is recognized as the most diverse in ecosystems (Secretaria de Medio Ambiente y Recursos Naturales, 2016. Reserva de la Biosfera Sierra Gorda celebra su 19 aniversario).

Figure 2. Distribution of protected natural areas in Querétaro state



Source: Secretariat of Sustainable Development, Regional Ecological Management Program of the State of Querétaro, 2018.

In 1997, the Sierra Gorda was decreed as a Biosphere Reserve by the federal executive branch, since then, the region has become an example of sustainable development for Mexico and the world, as well as THE RBSG is one of the 42 biosphere reserves recognized by UNESCO in territory and is a Member of the Man and Biosphere Program (MaB) [30]. This ecological reserve even protects the Jalpan Dam, declared a Ramsar site in 2004, as a refuge for 140 species of waterfowl and migratory birds (Secretaria de Medio Ambiente y Recursos Naturales, 2016. Reserva de la Biosfera Sierra Gorda celebra su 19 aniversario).

The Biosphere Reserve has an area of 383,567 hectares, equivalent to 32.02% of the territory of the state of Querétaro. It has 11 core areas covering an area of 24,803 hectares and a buffer zone with an area of 358,764

hectares. 70% are private property, 27% communal or ejidal and 3% federal. It is home to some 100,000 people in 638 communities, spread over five municipalities (CONANP (Comisión Nacional de Áreas Naturales Protegidas). 2017. La Reserva de la Biosfera Sierra Gorda cumple 20 años de su decreto).

Currently, RBSG is home to the following species of flora and fauna (Grupo ecológico Sierra Gorda. 2016. Reserva de la Biósfera Sierra Gorda):

- 127 species of fungi, of which five species have protection status;
- 800 species of butterflies, this figure is surpassed only by the Blue Mountains Biosphere Reserve, Chiapas. RBSG houses about 30% of butterflies in Mexico;
- 27 species of fish, 4 of them in a state of protection;
- 131 species of reptiles and amphibians, 7 species of amphibians and 34 species of reptiles under state of protection;
- 339 species of birds, of which 27 are endemic to Mexico, as well as the refuge of the last 60 green macaws in the world, which nest in the Barro Basement;
- 110 species of mammals, making RBSG the second richest protected natural area in the country.

Of all the protected natural areas in Mexico, RBSG occupies the first place in ecodiversity, thanks to its geographical position at the confluence of the neotropical and neotropical bioregions, and the fact that it presents a great physiographic complexity, with a diversity of heights ranging from 300 meters above sea level in the Santa Maria River Canyon in the municipality of Jalpan de Serra up to the 3160 meters above sea level that reaches Cerro de la Pingica in the municipality of Pinal de Amoles; this leads to numerous climatic variations that have favored the establishment of a remarkable diversity of vegetation types, associated with some fragile wildlife populations (Pedraza 2014).

3. Sustainable Entrepreneurship Model in the Sierra Gorda Biosphere Reserve

In addition to being an ecological reserve with great natural value at the state and federal level, the Sierra Gorda Biosphere Reserve is characterized by offering ecotourism activities and developing sustainable projects, which benefit the surrounding communities and allow the tourist a low impact approach with nature. The Sierra Gorda Ecological Group (GESGIAP), is a civil association that together with the Alliance for the Conservation of the Sierra Gorda, promote and lead a model of entrepreneurship and social participation for the Sierra Gorda, consolidating economic development with the conservation of biodiversity (Grupo ecológico Sierra Gorda. 2016. Reserva de la Biósfera Sierra Gorda).

Since 1987, GESGIAP has worked on the protection of the environment and the sustainable development of rural communities in the state of Querétaro, that is why as a result of its constancy and innovation it has been a creditor of 40 national and international recognitions for proposals to recover and protect biodiversity and diversify development opportunities for the inhabitants, in conjunction with an effective ecotourism programme, among its recognitions are (Grupo ecológico Sierra Gorda. 2016. Reserva de la Biósfera Sierra Gorda):

- Winners in the category of preserve the Natural World, by National Geographic. (2016)
- Global Sustainable Tourism Council recognized 14 destinations worldwide according to its global criteria for sustainable destinations, in its Early Adopter program. (2014)
- To do! Award for socially responsible tourism, obtained at the Berlin International Tourism Fair. (2013)
- Awarded the Blue Marble Award by the Adventure Travel Association (ATTA) community, its members represent a community of more than 1,000 responsible companies and destinations that transform businesses into promoters of sustainability and justice worldwide. (2011)
- World Travel and Tourism Council Award (WTTC), by Tourism for Tomorrow Award, who recognize best practices in sustainable tourism globally, based on environmentally friendly operating principles. (2003)

During 2000, the Sierra Gorda Ecological Group, in conjunction with the Mexican government, managed to generate public-private coordination by establishing a management plan focused on sustainable agricultural production and the restoration of degraded natural systems, with special attention to generating local benefits. A 'sustainability education' programme was also developed, involving 162 schools in the region (UNESCO (Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura). 2016. México: Grupo Ecológico Sierra Gorda, campeones de la tierra por el desarrollo sostenible).

Sierra Gorda Ecotours is part of the Alliance for the Conservation of the Sierra Gorda, is a group of civil society organizations dedicated to preserving the natural beauty and diversity of the Sierra Gorda Biosphere Reserve, MaB UNESCO, and offers responsible tourism that generates opportunities and an economic spill for communities in the region through various services comprising accommodation, food and guided tours, employing local people who share their knowledge and richness of their traditions.

Its main objective is to turn tourist visits into support to safeguard ecological reserves while achieving responsible contact with nature, as the stay is made in a cabin with ecotechnics and the routes are carbon neutral, that is, the net carbon emissions issued to the environment equal zero. Similarly, great efforts are being made to ensure that the routes have a low environmental impact and that partners use local and sustainable materials; through the Alliance for the Sierra Gorda, environmental education is supported to minimize the human impact on the Reserve.

There are several options of tours and guided tours within the Sierra Gorda Biosphere Reserve, because such tours require several days of activities, it is possible to find tourist packages that include: lodging in ecological cabins or with the basic infrastructure to generate the least impact to the environment, meals in anchorages or restaurants of the site (encouraging the local sustainable economy) and transport within the Sierra Gorda, it is important to mention that although vans with different passenger capacities are used, much of the routes are carried out on foot, with the aim of using vehicles within the Sierra Gorda to a lesser extent.

Within the ecotourism itineraries offered by Sierra Gorda Ecotours, it is possible to take a tour of the Franciscan Missions, which are recognized by UNESCO as a World Heritage Site. In addition, rural tourism activities can be found, as there are tours that provide the option to get closer and live with the communities that inhabit these places, through visits to workshops of (<https://sierragordaecotours.com>):

- Mud and ecotechnic construction techniques.
- Visit with a group of women who make jams with fruits from the region.
- Introductory workshop for the production of healthy foods through activities such as tours in bio-intensive orchards and monitoring on soil health.
- Tours that transcend learning about forest conservation and how to strengthen the services provided in these spaces.

State SECTUR emphasizes that the Sierra Gorda is a role model on rural tourism and ecotourism in protected natural areas, and that has allowed the positioning of the destination as an important tourism project, thanks to the participation of the community and the minimal impact generated by nature's exploitation activities; it also indicates that the Sierra Gorda Ecological Group is an example of the strength of civil organizations and how development opportunities can be generated for surrounding areas while educating in an environmental culture of sustainability, protection and conservation of biodiversity (Secretaría de Turismo 2017. Turismo Sostenible, Modelo Para Crear Destinos Turísticos Con Visión Social Y Respeto A Biodiversidad).

While the main objective of protected areas and ecological reserves is the conservation of ecosystems and landscapes found in these areas, the presence of tourism and sustainable projects that favor the economy of the inhabitants of communities is also a key factor. The creation and design of infrastructure to welcome visitors, does not always have to impact the environment; currently, there are so-called ecotechnics, which are techniques that are characterized by efficiently leveraging natural and material resources to produce functional products and services (Secretaría de Medio Ambiente y Recursos Naturales, 2018. Turismo sostenible en áreas naturales protegidas), hence, these techniques are favorable for promoting ecotourism in ecological reserves, because their effect on the environment is very low and allows the tourist to be more in contact with nature, in a responsible manner.

In the Sierra Gorda Biosphere Reserve, an ecological lodging option has been implemented, through cabins built with bio-construction techniques using materials such as mud, palm, straw bale, in order to minimize the ecological impact generated when building any infrastructure and its subsequent use, these building materials are ideal to store the heat in winter and generate a cool atmosphere during the summer. RBSG has a network of eco-friendly cabin tour operators in the municipalities of Jalpa de Serra, Pinal de Amoles and Cadereyta de Montes. The vast majority have an average availability of four to eight cabins, with capacity for up to 10 people, usually.

According to data from the Querétaro Tourism Promotion Directorate (PROMOTUR), during 2017 the occupancy of accommodation in the six municipalities that make up the Sierra Gorda was 52%, however during long weekends, 90% occupancy. Likewise, PROMOTUR mentions that most of the visitors are nationals, residents or from nearby states such as Guanajuato, San Luis Potosí, the State of Mexico and the City of Mexico. (El Heraldo de México. 2017. La Sierra Gorda de Querétaro un destino económico en el centro del país).

Conclusions

The route of the Sierra Gorda has begun to be better known among tourists who visit the state of Querétaro, for which the evaluation and delimitation of the carrying capacity of the areas with the highest number of visitors or activities is imperative. recreational activities, in order to avoid short and long-term damage to the biosphere

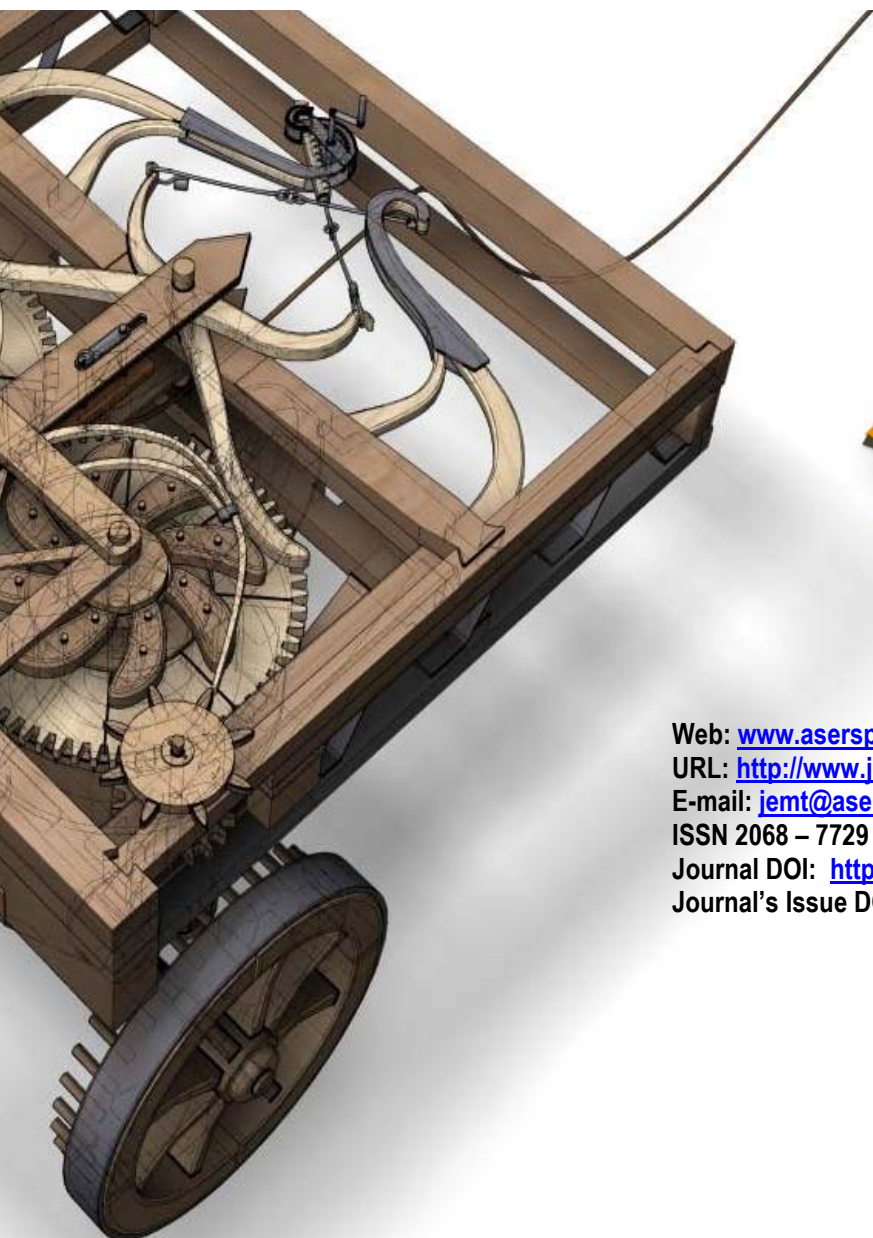
reserve, Actions undertaken in the Sierra Gorda Biosphere Reserve that have promoted sustainable tourism, community support, social benefit, economic and environmental that has been developed in that area are a clear example that must be replicated in other existing ecological reserves in Mexico and the world.

References

- [1] Brenner, L. 2006. Áreas naturales protegidas y ecoturismo: el caso de la Reserva de la Biosfera Mariposa Monarca, México. *Relaciones. Estudios de Historia y Sociedad*, XXVII: 237-265. Available at: <https://www.redalyc.org/articulo.oa?id=137/13710508>
- [2] El Heraldo de México. 2017. La Sierra Gorda de Querétaro un destino económico en el centro del país. Available at: <https://heraldodemexico.com.mx/mer-k-2/la-sierra-gorda-de-queretaro/>
- [3] Fontano, F. 2019. ¿Qué es el turismo masivo? Viajeros en ruta. Available at: <https://www.viajerosenruta.com/que-es-el-turismo-masivo/>
- [4] Kotler, P., et al. 2011. Marketing turístico. Madrid: Pearson: 660-663
- [5] Magio, K. and Velarde, M. 2019. El ecoturismo en las reservas de la biosfera: Prácticas y actitudes hacia la conservación. *Revista de Turismo y Patrimonio Cultural*, 17(1): 97-112. DOI:<https://doi.org/10.25145/j.pasos.2019.07.007>
- [6] Pedraza, R. 2014. La importancia de la Reserva de la Biosfera Sierra Gorda. Grupo Ecológico Sierra Gorda. Available at: <https://sierragorda.net/en/la-importancia-de-la-reserva-de-la-biosfera-sierra-gorda/>
- [7] Pérez de las Heras, M. 2012. La guía del ecoturismo o cómo conservar la naturaleza a través del turismo. España: Mundi-prensa.
- [8] Puertas, I. 2006. Ecoturismo en las reservas de la biosfera: Análisis del ecoturista en Bañados del Este (Uruguay) y Cabo de Gata-Níjar (España). *Estudios Turísticos*, 169-170: 183-200. Available at: https://turismo.janium.net/janium/Objetos/REVISTAS_ESTUDIOS_TURISTICOS/97587.pdf
- [9] Schaaf, T. 1999. El programa El Hombre y la biosfera de la UNESCO en las zonas de montaña. *Revista internacional de silvicultura e industrias forestales*, 50. ISSN 0251-1584. Available at: <http://www.fao.org/3/x0963s08.htm#el%20programa%20el%20hombre%20y%20la%20biosfera%20de%20la%20unesco%20en%20las%20zonas%20de%20monta%C3%B1a>
- [10] Tejeda, C. 2017. Living & Travel. Feria de Turismo de Aventura en México. Available at: <http://livingandtravel.com.mx/presentan-edicion-2017-la-feria-turismo-aventura-mexico/>
- [11] Biodiversidad Mexicana. 2020. Áreas Protegidas. Available at: <https://www.biodiversidad.gob.mx/region/areasprot>
- [12] Biodiversidad Mexicana1. 2020. México Megadiverso. Available at: <https://www.biodiversidad.gob.mx/pais/quees>
- [13] CONACYT. 2019. Áreas naturales protegidas del estado de Querétaro. Available at: <https://www.conacyt.gob.mx/cibiogem/index.php/anpl/queretaro>
- [14] CONANP (Comisión Nacional de Áreas Naturales Protegidas). 2017. La Reserva de la Biosfera Sierra Gorda cumple 20 años de su decreto. Available at: <https://www.gob.mx/conanp/articulos/la-reserva-de-la-biosfera-sierra-gorda-cumple-20-anos-de-su-decreto>
- [15] CONANP. 2018. 100 años de Conservación en México 1917-2017. Áreas Naturales Protegidas. México: SEMARNAT-CONANP.
- [16] DATATUR. 2019. Ranking mundial de turismo internacional. Secretaría de Turismo. Available at: <https://www.datatur.sectur.gob.mx/SitePages/RankingOMT.aspx>
- [17] Grupo ecológico Sierra Gorda. 2016. Reserva de la Biósfera Sierra Gorda. Available at: <http://sierragorda.net/reserva-de-la-biosfera-sierra-gorda/>
- [18] INEGI (Instituto Nacional de Estadística y Geografía). 2019. Producto Interno Bruto turístico. Available at: <https://www.inegi.org.mx/temas/turismosat/>

- [19] Secretaría del Medio Ambiente. 2018. Ecotecnias. Available at: http://sma.edomex.gob.mx/cuidaelmedio_ecotecnias
- [20] Secretaria de Medio Ambiente y Recursos Naturales. 2010. Áreas naturales protegidas. Available at: http://aplicaciones.semarnat.gob.mx/estadisticas/compendio2010/10.100.13.5_8080/ibi_apps/WFServletbaa5.html
- [21] Secretaria de Medio Ambiente y Recursos Naturales, 2016. Reserva de la Biosfera Sierra Gorda celebra su 19 aniversario. Available at: <https://www.gob.mx/semarnat/articulos/reserva-de-la-biosfera-sierra-gorda-celebra-su-19-aniversario>
- [22] Secretaria de Medio Ambiente y Recursos Naturales, 2018. Reserva de la Biosfera, áreas que se preservan, se disfrutan y se aprovechan sustentablemente. Available at: <https://www.gob.mx/semarnat/es/articulos/reservas-de-la-biosfera-areas-que-se-preservan-se-disfrutan-y-se-aprovechan-sustentablemente?idiom=es>
- [23] Secretaria de Medio Ambiente y Recursos Naturales, 2018. Turismo sostenible en áreas naturales protegidas. Available at: <https://www.gob.mx/semarnat/articulos/turismo-sostenible-en-areas-naturales-protegidas?idiom=es>
- [24] Secretaría de Turismo. 2005. *Compendio de estadísticas ambientales 2009*. Obtenido de Dirección General de Desarrollo de Productos Turísticos. Available at: https://apps1.semarnat.gob.mx:8443/dgeia/compendio_2009/compendio_2009/10.100.8.236_8080/ibi_apps/WFServlet43c3.html
- [25] Secretaría de Turismo. 2011. Programa de Turismo Sustentable en México. Obtenido de Dirección General de Planeación Estratégica y Política Sectorial. Available at: http://www.sectur.gob.mx/PDF/planeacion_estrategica/PTSM.pdf
- [26] Secretaria de Turismo 2017. Turismo Sostenible, Modelo Para Crear Destinos Turísticos Con Visión Social Y Respeto A Biodiversidad. Available at: <https://www.gob.mx/sectur/prensa/turismo-sostenible-modelo-para-crear-destinos-turisticos-con-vision-social-y-respeto-a-biodiversidad>
- [27] Sierra Gorda Ecotours. s/f. Disponible en: <https://sierragordaecotours.com/>
- [28] SINAC (Sistema Nacional de áreas de conservación Costa Rica). S.f. Reservas de la Biosfera. Available at: <http://www.sinac.go.cr/ES/RESERBIOSFE/Paginas/zonif.aspx> (accessed october 22, 2020).
- [29] The International Ecotourism Society. 2015. What is ecotourism? Available at: <https://ecotourism.org/what-is-ecotourism/>
- [30] UICN (Unión Internacional para la Conservación de la Naturaleza). 2019. Categorías de manejo de áreas protegidas de UICN. Available at: <https://www.iucn.org/es/regiones/am%C3%A9rica-del-sur/nuestro-trabajo/%C3%A1reas-protegidas/categor%C3%ADas-de-manejo-de-%C3%A1reas-protegidas-de-uicn>
- [31] UNESCO (Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura). 2016. México: Grupo Ecológico Sierra Gorda, campeones de la tierra por el desarrollo sostenible. Available at: <http://www.unesco.org/new/es/media-services/single-view-tv>
- [32] UNESCO. 2019. Programa sobre el Hombre y la Biosfera. Available at: https://unesdoc.unesco.org/ark:/48223/pf0000370519_spa
- [33] World Tourism Organization (2005), UNWTO Tourism Highlights, 2005 Edition, UNWTO, Madrid, Available at: <https://www.e-unwto.org/doi/book/10.18111/9789284411900>

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