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# The Value Assessment and Planning of Industrial Mining Heritage as a Tourism Attraction: The Case of Las Médulas Cultural Space

Iria Caamaño-Franco \* and María Andrade Suárez<sup>†</sup>

Department of Sociology, University of A Coruña, 15071 A Coruña, Spain; maria.andrade@udc.es

\* Correspondence: iria.caamano@udc.es

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**Abstract:** This article analyzes the heritage construction process or “heritagization” of Las Médulas gold mines, a prime example of how Spain’s mining heritage has been reused for tourism purposes. Based on a methodology combined documentary analysis and fieldwork, informal interviews with territorial actors and surveys targeting residents, this study addresses the complexities of integrating this cultural landscape into a tourism development strategy and analyzes the support and impacts perceived by the local population. The information gathered in this research is intended to facilitate the development of adequate planning and generate recommendations to mitigate the debate that has surrounded Las Médulas and confronted its stakeholders for years. The results show that the existence of multiple agents and institutions acting on the destination leads to problems of management and collaboration. In addition, the local population’s lack of involvement and awareness is also hindering integral tourism planning. There are a number of positive impacts mainly related to the increase in the tourist value of the image of the area and its historical and cultural heritage, as well as the consequences of financial management for tourism, which also help to predict the levels of support of residents to the tourist development of Las Médulas.

**Keywords:** cultural heritage; industrial mining heritage; industrial tourism; tourism planning; territorial planning

## 1. Introduction

Following decades of being abandoned, there is now a growing interest worldwide in recovering, conserving, and promoting mining heritage in a manner that is compatible with other productive activities [1–3]. As a result, a range of territories where mining activity has formed part of their traditional culture, have begun to consider these resources from the perspective of cultural heritage.

The need for projects aimed at reactivating the economy and generating alternative forms of employment to offset the decline of the mining industry has led to actions to recover the industrial mining heritage [4]. Researchers like Yashalova et al. [5] have indicated that industrial tourism encourages regional economy growth by stimulating the activities of related sectors. Indeed, the current possibilities of generating new socioeconomic dynamics and implementing actions for the conservation and revitalization of the mining heritage and culture tend to be based on taking advantage of their potential for cultural tourism.

In this sense, disused and abandoned mines, particularly those located in peripheral and disadvantaged regions, are today considered “complex heritage units” and an endogenous resource with multiple options for social, economic and territorial activation and development on a local scale [6] (p. 1). The objective sought in these spaces is therefore the recovery of the mining heritage for cultural, and by extension, tourist purposes [7–9].

It must be remembered that heritage and tourism are currently considered a key strategy for socioeconomic and environmental recovery. As a result, tourism activity is increasingly seen as an effective tool in offsetting the decline experienced by a number of territories, and, in line with this research, a means of activating industrial areas with particular heritage and ethnographic value [10–15].

Mining is no longer considered an exclusively extractive activity that shapes the cultural landscapes, and in this sense, tourism can be seen as the cornerstone for this transition [3]. In such cases, the industrial plant becomes a post-industrial tourism object, making regional post-industrial heritage available [16]. Indeed, reinventing these post-mining spaces and converting them into “cultural” objectives for tourism has proved to be a successful strategy over the last few decades [11,17] and there are a number of consolidated experiences in this sense in countries such as the UK, Germany, the Netherlands, Belgium, Sweden, Holland, Austria, Poland, France, Italy and of course Spain, where the number of mining tourism initiatives has grown considerably [18].

Among the best-known examples of the reuse of Spain’s mining heritage for tourism purposes are Las Médulas gold mines, located in the Autonomous Community of Castilla y León (northeast of Madrid), a magnificent case of the historical process in which natural elements and human intervention come together in a setting where the traces of Roman mining activity—the channels, mining excavations and spoils—blend in with the unique environmental resources—the geomorphology, forests and wetlands. The passage of time has built up this heritage site of immense historical, ecological and socioeconomic significance [19].

In this paper Otgaar’s definition of industrial tourism [20] has been taken as a reference as visits to sites like museums, parks or other infrastructure, based on the active or abandoned industrial enterprises, which now fulfill a new function.

In this sense, Vukosav et al. [21] first of all point to the fact that industrial heritage can have many functions and purposes, but its role in the general development of a community depends on the needs and priorities of its representatives. Moreover, they indicate that revitalization projects are based on inter-sectoral partnerships and their implementation requires engagement and cooperation of private sector and state support. According to the researchers, local authorities should play a key role in such processes, as these are the local authorities that assess which projects bring the best investors and what is of interest for the city.

Despite the growing interest shown in industrial tourism in recent years, the need for appropriate planning remains a key issue [22–24], together with a correct tourism management system that will guarantee the activation of the destinations whilst ensuring sustainable territorial development [25–27]. Indeed, the planning of tourism spaces is currently a major research topic of unquestionable complexity [28]. One of the objectives of this research is therefore to analyze the complicated process of assessing the value and activating Las Médulas’ mining heritage, focusing in particular on the key agents involved in tourism planning.

In this regard, the novel nature of this work is highlighted in line with the most recent approaches, since the literature review reveals the limited availability of scientific basis for the development of an effective tourism management program for industrial heritage tourism. Therefore, the intention is to provide a reference to fill the gap in knowledge about tourism by analyzing the relationship with tourism from the perspective of local residents and offering policy recommendations on the broader regional impact.

Equally important is an insight into the support local residents give to tourism development, as it has been shown that the success and sustainability of this activity depend largely on the active support of the local population [28–35]. A further objective of this study is therefore to examine the local community’s support for Las Médulas and the development of mining tourism, and to analyze the tourism-related impacts perceived by residents, together with the optimum predictors of the support for the development of this form of activity within the community. Thus, the study also to provide planning recommendations regarding Las Medulas’s broader social impact.

The following sections provide a theoretical framework to support this proposal, as well as details of the case study and the results obtained from the research, consisting of a bibliographical and documentary review (including statistical and territorial data about the destination). The fieldwork included informal interviews with agents and experts in the area, as well as a study of the local population's perceptions, using a quantitative methodology based on a survey.

## **2. The Tourism Planning and Value Assessment of Industrial Mining Heritage as a Tourism Resource**

From the late 19th century to the mid 20th century, mining formed a crucial part of the economic activity of many regions in Spain. Today, however, it is seen as a merely residual economic sector, following the closure of the vast majority of mines from the second half of the 20th century onwards, either due to their low profitability rates, high operating costs, loss of productivity in the face of international competition or the depletion of mineral reserves. Other factors include a growing social and political awareness of the environmental impact of this activity [15].

The decline and crises that forced the closure of a number of Spanish mines led to the appearance of problems of a varying nature (social, economic, demographic, etc.), revealing the need for alternative solutions to offset falling population levels and the lack of economic activity as well as improving the image of the territories involved [7]. In this sense, one of the possible means for conserving and/or rehabilitating this heritage was to convert it into tourism attractions [36,37]. The possibility of "re-using" the old industrial and mining heritage could favor the development of an economic opportunity [38–40].

Various authors consider that industrial heritage forms a major part of the cultural heritage [36,41,42], due to its material value and in particular its social value. They refer to factors such as the growing social awareness of the need to protect and conserve industrial heritage, the spread of the values associated with heritage and their regenerative function, coupled with institutional and legal recognition [43]. In addition, the work of the scientific community, public administrations and the public at large have contributed to the inclusion of our industrial past as a cultural element worthy of consideration. In this sense, major efforts have been channelled into ensuring due recognition and valorisation for this legacy [8].

Restored mining areas are the visible evidence of new cultural trends that are far removed from the standard consumption of tourism products as well as mass and oversaturated demand [3]. In the case of Spain, the first tentative steps towards the recovery of its mining heritage were taken in the 1990s. In addition to Las Médulas, we find other successful examples such as Almadén, in Ciudad Real, which ceased its mining activity in 2003 and was included on the UNESCO World Heritage list in 2012, or Río Tinto, in Huelva, as well as other major sites in Castilla y León or the Basque Country [13].

Internationally, it is important to note the Zollverein mine in the industrial Ruhr area (Germany) which has been integrated into the UNESCO list of World Heritage Sites in 2001 and is one of the anchor points of the European Route of Industrial Heritage (ERIH); the Wieliczka salt mine (Poland), first industrial heritage resource included in the UNESCO list of World Heritage Sites in 1978; the Big Pit mine (England) one of Britain's leading coal museums; the Ostrava region (Czech Republic) where it has converted mines and factories into tourist and cultural attractions; or the Iwami Ginzan silver mine in Japan, the largest silver mine in Japanese history became a UNESCO World Heritage Site in 2007.

Therefore, it is detected that there is a great difference between the different cases of industrial mining-tourism heritage. On the one hand, highly urbanized and industrialized areas where the landscape is often perceived as unattractive and ruined. On the other hand, peripheral locations in rural areas with high natural values for tourism and a much lower concentration of inhabitants. However, depending on the specific case, the challenges will be different, although not necessarily minor.

In both cases tourist activities become an attempt to make use of non-material (history, ideas) and material values (abandoned machinery and facilities) for tourist purposes, thus contributing to

the sustainable development of society [16]. In the light of these considerations, it appears clear that industrial tourism can also contribute a number of benefits, provided it is subject to suitable tourism planning and management [24–26], capable of controlling the impacts [19,22,23,44] and introducing initiatives that boost local identity, showing both visitors and the local community the elements that make up the region's history and culture.

It is therefore a case of taking advantage of the cultural interest visitors show in industrial heritage [45], encouraging ties between tourism and local development rooted in the principles of sustainability [46]. The bibliographical review has shown that as a form of cultural tourism, industrial tourism has the ability to attract visitors [47] and is therefore a factor with the capacity to boost local development [11,37,48,49], compatible with the basic principles of sustainability. The factors that condition the successful exploitation of the mining heritage for tourism purposes include quality, abundance, plurality and the state of conservation of the heritage resources, as well as their appeal and an effective promotional and marketing strategy [50].

However, tourism development in these areas is far from easy [15] and in this sense it is necessary to highlight the difficulties that arise in the valorization processes and that often encounter legislative handicaps, negative connotations surrounding the resource and/or involvement of a large number of actors with varying and often conflicting interests [3], amongst others. This implies, to a far greater degree than in other forms of tourism, the need for cooperation-coordination-partnership structures in order to guarantee the efficient management of these resources and their effective conversion into tourism destinations [7] (p. 235).

Consequently, mines should be considered atypical industrial sites due to the fact that in addition to economic components, they also include social, landscape, cultural and anthropological consideration. Indeed, this type of heritage requires creative solutions for projects to restore, adapt and manage these sites and their new use as tourism resources [6]. Furthermore, this challenge must be considered from a twofold approach: on the one hand, the awareness of the local community and the commitment of public bodies and institutions; and on the other, a coordinated action plan aimed at promoting and raising awareness and knowledge of heritage assets, as well as restoring, rehabilitating and protecting the facilities in order to secure the social benefits, as well as economic profit [14].

In the light of these considerations, and despite the lack of a single, unvarying planning model [51], the inevitably differing needs stemming from the particular characteristics and objectives of a region are a basic consideration for the creation of balanced, sustainable and integrated tourism development models [26]. Such models must also be tailored to meet the new realities resulting from changes in competitiveness factors, the digitalization of tourism activity, sustainable development as an essential goal, and local societies' new demands regarding tourism [27] (p. 13).

The initial hypothesis for this study is that the local population play a key role in tourism development planning and management and can determine success or failure due to their capacity to collaborate with or obstruct the sector [29,52]. A number of earlier studies have shown that the more positive the economic, social, cultural and environmental impacts on local residents, the greater their willingness to support tourism development. Conversely, their perception of tourism's negative impacts will lead to a reduction in this support [35,53]. The role played by the local population is crucial because, as their increasing awareness of their involvement in the planning process will boost their sense of motivation and responsibility. Likewise, the greater their participation in drawing up tourism strategies and the conversion of the industrial space into a tourism destination, the greater the degree of tourism development achieved [25]. In this sense, securing residents' support could well become a key task for managers responsible for tourism planning and development.

It must be stressed that successful sustainable development of post-mining regions through tourism requires the commitment and coordination of stakeholder objectives in line with the territories' development needs. Successful tourism requires a balance in relations between tourists, residents, places, organizations, and companies that provide tourist services [30]. Securing an insight into local

residents' support for tourist development is crucial, as it indicates that the success and sustainability of this activity is largely dependent on the active support of the local population [29].

### 3. Methodological Design

What follows is an explanation of the methodology applied in order to assess and contrast empirically the objectives set (See Table 1).

**Table 1.** Methodological research process Source: Author's own.

Objectives	Research Techniques
Study planning and management of industrial mining heritage as a tourist attraction in Las Médulas.	<ul style="list-style-type: none"> <li>• In-depth review of bibliographical sources, technical documents and secondary data.</li> <li>• Informal interviews and conversation with actors and experts.</li> </ul>
Identify the tourism impacts perceived by residents and the optimum predictors of support for this activity in the community.	<ul style="list-style-type: none"> <li>• Bibliographical review.</li> <li>• Questionnaire to local population.</li> </ul>

The first step consists of the analysis of the planning process (the principal policies applied and the participating agent) underlying the transformation of Las Médulas into a tourism resource. The methodology employed consisted of an in-depth review of bibliographical sources, technical documents and secondary data, as well as fieldwork consisting of on-site observation, including informal interviews and conversation with various actors and experts in this field.

As referred to earlier, the initial hypothesis is that local residents' support for tourism development plays a crucial role in the success of this process. Firstly, because the effects of tourism on local development will depend on the local population's awareness and recognition of the value of their cultural heritage, and secondly, because effective tourism governance inevitably requires the local population's commitment and involvement [54]. Based on these considerations, a further objective is to identify the tourism impacts perceived by residents and the optimum predictors of support for this activity in the community.

The results of the bibliographical review ([32,37,41,43], among others) were used to select the most relevant factors that determine the impact of tourism on local development and a total of 16 items were drawn up for the questionnaire that seeks to determine the local population's perceptions. Finally, 5 main types of impacts have been included: governance (three items), economic (four items), social (three items), cultural (three items) and environmental (three items).

Additional variables were included in reference to the area's tourism potential (five items) as well as the measurement of residents' support for tourism (three items) since it has also been discovered that the impacts perceived by the local population are related to the degree of tourism development of the destination as well as the attitudes shown by the local population towards tourism, among other factors. Consequently, the choice of sample is justified because the effects of tourism on local development will depend on the perception, assessment and expectations of the local community [54] regarding the value and recognition given to heritage and its tourism potential.

As for the certification of the reliability of each of the dimensions included in the questionnaire, the latent concepts included in the model were measured using multi-item scales in order to reflect their multidimensional nature. Regarding the weighting system for the variables and items included, the questionnaire included a 5-point Likert scale, where 1 represented "strongly disagree" and 5 "strongly agree".

For exploratory purposes, based on trial and error [55], research of an initially limited scope was conducted using a quantitative methodology. A structured questionnaire targeting the inhabitants of Las Médulas—a small village belonging to the municipality of Carucedo—was drawn up following a prior review of existing literature ([54–57], etc.).

The data collection procedure consisted of 65 valid surveys conducted in 2018 via a random sample of residents in order to carry out the preliminary study and obtain an initial notion of the key variables and the relationship between them. The results reveal a sample profile made up of 44.6% men and 55.4% women. Participants' ages ranged from 18 to 50 (57.8%) followed by those aged more than 51 (42.2%). Furthermore, 35% of them worked in hospitality and tourism, followed by commerce (15%). They were mainly employed by others (47.6%), followed by self-employed (22.2%) and retired (17.5%). As for their studies, the distribution was the following: primary (21.7%), secondary (43.3%), and university (35%). In relation to monthly personal income, 20% earned less than €600 and 48% earned between €600 and €1000.

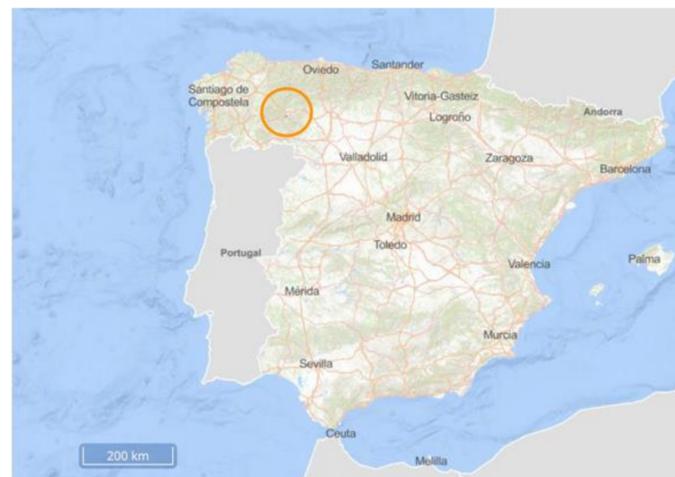
Once the information collection process was complete, and prior to the statistical processing, the data were coded and tabulated by creating a file using version 21.0 of the SPSS for Windows program (Statistical Package for Social Sciences). Univariate, bivariate and multivariate statistical techniques were used to process the data. The descriptive phases of the research (mean, standard deviation, etc.) was followed by a factor and a regression analysis.

#### 4. The Case of Las Médulas: From a Vast Roman Mine to a Historical and Natural Monument

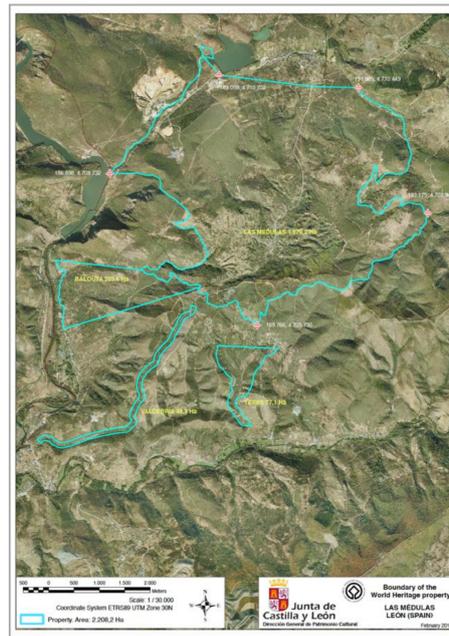
##### 4.1. Context Analysis

Las Médulas is an outstanding example of Roman open-cast mining (1st–2nd centuries CE) and an international reference for “the tourism reinvention of obsolete mining territories” [58] (p. 10).

Las Médulas Cultural and Natural Space occupies a rural and peripheral area of some 100 km<sup>2</sup> (1115 ha) situated in north-west Spain in the region of El Bierzo (See Figures 1 and 2), which in turn is located in the autonomous community of Castilla y León. It is included in the municipalities of Borrenes, Carucedo and Puente de Domingo Flórez. The sharp demographic decline and ageing population are two of the defining characteristics of these rural and sparsely populated areas (approximately 17 inhabitants per kilometer). Economic activity in the area is based mainly on agriculture and livestock farming, as well as slate quarrying, construction and a slowly developing service sector.



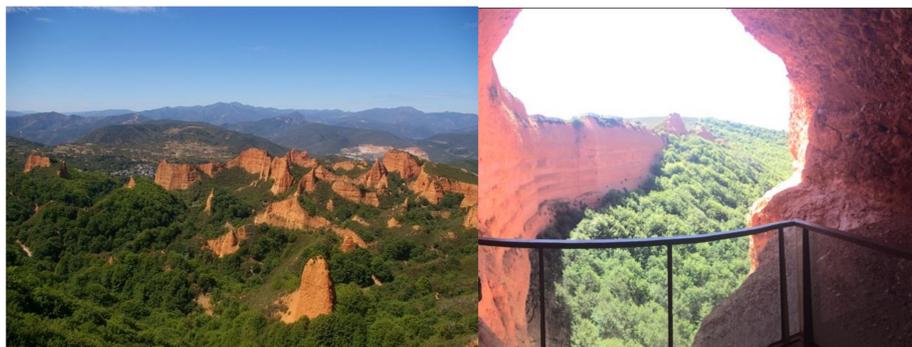
**Figure 1.** Situation of Las Médulas. Source: National center for geographical information (CNIG).



**Figure 2.** The Médulas: exploitation and accumulation sectors. Source: Castilla y León Government.

Unquestionably, Las Médulas is best-known for its striking scenery [8] and has become the principal resource of El Bierzo. The unmistakable appearance of Las Médulas cultural landscape was shaped by the mining activity during the days of the Romans, and the outstanding interaction between human intervention and nature earned its inclusion on the UNESCO World Heritage List in 1997. A declaration that referred specifically to the unquestionable fact that Las Médulas, the largest open-cast mine in the entire Roman Empire, had transcended its time and original use. Indeed, its sheer size, together with the number and state of the remains and the degree of conservation of the entire site, made it truly worthy of this acknowledgement and efforts to conserve it for future generations [59] (p. 83). In this sense, this site is also listed as an Archaeological Area (1996), part of the Natura 2000 Network and a Natural Monument (2002), amongst other figures.

According to the Geological and Mining Institute of Spain, the engineering work carried out by the Romans to extract gold two thousand years ago had a significant impact on the area's environment, creating an irregular landscape of reddish sands which today are covered with chestnut and oak trees (See Figure 3). As a result of the gold mining activity, over a period lasting for almost 200 years, almost 100 million cubic meters of earth were excavated [18] by means of a complex technique based on hydraulic power known as *ruina montium* which consisted of the use of water to fragment entire sections of a mountain at a single time and then washing the earth in order to finally separate the ore.



**Figure 3.** Views from the Orellán de Las Médulas viewpoint (Castilla y León). Source: Author's own.

The Romans ceased to mine the site after two centuries of activity, leaving behind clear evidence of their presence, numerous traces of which can still be seen today. This, together with the site's magnificent state of conservation and the geological features of the terrain, have converted Las Médulas into an exceptional ancient mining site: Similar examples are few and far between, and generally in a poor state of conservation. Indeed, Las Médulas is a unique setting of major significance in heritage, territorial, socio-political and economic terms [59].

In the light of the site's myriad natural and cultural resources, a number of tourism enterprises have begun to take shape, although the number of businesses providing activities and services associated with the cultural landscape and natural resources remains low, and therefore limiting the potential for growth in this area [59]. Efforts have also been made by public administrations to promote this destination and boost tourism activity. In this sense, actions have centered on improving accessibility, communication infrastructures and tourist information services, as well as extending the tourism offer, etc.

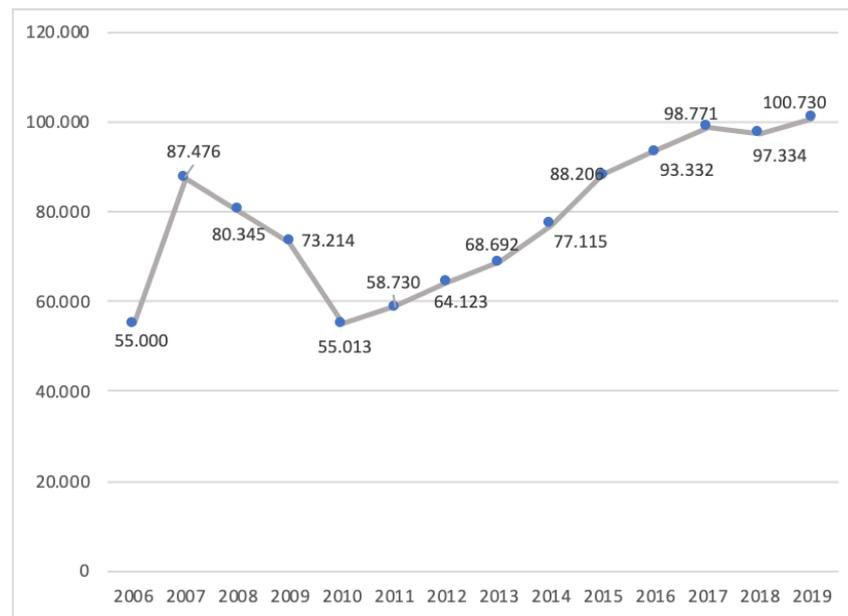
In Las Médulas there are various theme-specific routes and trails that offer an insight into the Roman legacy in this area (Surrounding Path, The Valiñas Path, Path of the Lago Sumido; The Convents Path; The Settlements Path . . . ). Table 2 shows that Las Médulas also has a network of tourism and visitor centers and information points, as well as other spaces (museums, interpretation centers, galleries, etc.). However, it must be stressed that activities intended to enhance the site's tourism value and its mining heritage in general are limited almost entirely to cultural services [50]. As a result, the range of tourism products share a considerable degree of similarity and the experience they offer visitors is practically the same [7], thereby seriously limiting market competitiveness [50].

**Table 2.** Tourism Facilities Source: Author's own.

Offer Information Centers	Managing Entity
Archaeological hall of Las Médulas	Institute of Bercian Studies
Las Médulas Visitor Reception Center	Bierzo County Council
Canals Interpretation Center	Las Médulas Foundation
Orellán Gallery	Tourist Services Orellán
The Roman Domus	Council of El Bierzo
House of the "Parque de Las Médulas"	Jurbial Environmental Services

The statistics, collected by the Visitor Reception Centre, are further confirmation of the interest in this site. The data shown in Figure 4 indicate a slight fall in visitor numbers for 2008 and 2009, followed by a sharper drop in 2010, coinciding with the economic crisis. However, from 2011 onwards, tourist flows have increased consistently each year, with the exception of 2018, which registered a temporary, albeit considerable, dip in visitor numbers, possibly attributable to the start of the Intermédulas transport service (involving the compulsory use of the bus in order to solve parking problems) and which did not produce the expected results. This situation was reversed the following year, with a record growth rate and visitor numbers reaching an all-time high of over 100,000.

A further point for consideration is that the summer months attract the largest number of visitors, peaking in August. Public holidays are also notable in terms of visitor numbers. As for the profile of visitors to Las Médulas, they are normally Spanish and from the surrounding regions (the majority are from Madrid, Galicia, Castilla y León and the Basque Country). In addition, and according to the Castilla y León 2014–2018 Strategic Tourism Plan, the majority of visitors form part of the Spanish Government's IMSERSO program for senior citizens or belong to group tours organized by travel agencies and schools as part of their educational programs.



**Figure 4.** Evolution in the number of visitors to Las Médulas. Source: Author's own based on data provided by the Visitor Centre.

#### 4.2. Evolution of Planning and Management in Las Médulas

Planning is a necessary tool in order to reach the standards of quality and sustainability required of any tourism product, a fact that is even more important in the case of spaces that have fallen into disuse and suffered the deterioration of the landscape. Previous studies have indicated that the majority of initiatives to promote and recover the value of mining resources receive backing mainly from government sources, as well as foundations and private entities [8], and that there is a clear lack of public-private cooperation.

The situation is similar in the case of Las Médulas: most of the initiatives aimed at the recovery and promotion of its mining heritage and its complex conversion for tourism purposes are backed mainly by public policies and institutions which, through a series of action plans and interventions focused both on tourism and other areas, have impacted on territorial development.

The European Union has provided backing for a number of initiatives in and around Las Médulas aimed principally at diversifying activity in sectors other than mining. Examples include agriculture and livestock farming, forestry, arts and crafts, the retail trade, tourism, culture and ICTs. Examples include the Rural Development Program (2014–2020); the LEADER Program (2014–2020), administered in this area through a Local Development Group run by El Bierzo's Development Association (ASODEBI in its Spanish initials); and also the Coal Industry Plans (1998–2005/2006–2012) within the framework of the Coal Mining and Alternative Development Plan of the Spanish Coal Mining Regions (MINER in its Spanish initials).

Mention must also be made of a number of economic activation strategies on a regional level. These include the Economic Activation Plan for the Mining Municipalities of Castilla y León (2016–2020) and a number of tourism plans such as the Castilla y León Integral Tourism Accessibility Plan (2017–2019), the Castilla y León Strategic Tourism Plan (2014–2018) and the Castilla y León Strategic Tourism Plan that is currently in force (2019–2023). The review of these documents reveals that although they do not specifically refer to Las Médulas as a tourism resource, the objectives do include the specific promotion of the tourism resources of mining areas as a means of generating economic activity through tourism.

Local initiatives include Las Médulas Tourism Activation Plan (2001–2003), which receives backing from a collaboration agreement signed between the Spanish Government, the Junta de Castilla y León Autonomous Government, El Bierzo Regional Council and the Tourism Promotion Association.

Although a total of 1.4 million euros were made available through this plan, only 7% of the budget was actually invested due to ongoing disputes between the various agents (the hotel and catering sectors, local authorities, associations, etc.), thereby activating latent conflicts [60], related on the one hand to the compatibility of the cultural or archaeological function of this space (Las Médulas Foundation) and tourist and economic interests on the other (the Regional Council).

Ten years later, further attempts at tourism planning were made through Las Médulas Adaptation and Usage Plan (2013–2016), an initiative launched by the Junta de Castilla y León and which outlined the principal actions to be carried out (scientific research; the protection and conservation of the Cultural Space; access, public use and visitor services), together with the proposal for a Governing and Advisory Body for Las Médulas Natural Monument and Cultural Space which would act as the sole management and advisory body, composed of 36 members, including a large representation of residents’ associations and the area’s municipalities.

However, this plan remained on the drawing board and was never formally constituted. The social and institutional agents involved in managing this site continue to wait for news of the first convocation of the promised sole management body which in theory is responsible for planning and administering investments approved several years ago.

Taking the contents of the latter two plans as its basis, a new tourism renovation plan was drawn up. The Plan Médulas 20/20 (2015–2018) had a budget of €600,000 and was promoted and financed by the Junta de Castilla y León, whilst Las Médulas Foundation would be responsible for implementing the plan. The aim of this project was to apply initiatives intended to protect, promote and disseminate the site’s heritage. However, today no such master plan is in force, and the intention instead is to reactivate, without any major changes, Las Médulas Adaptation and Usage Plan, which was first approved in 2013. Therefore, two stages can be established: a first phase of protection, assessment and recognition, and a second phase, focusing on planning and management (See Figure 5).

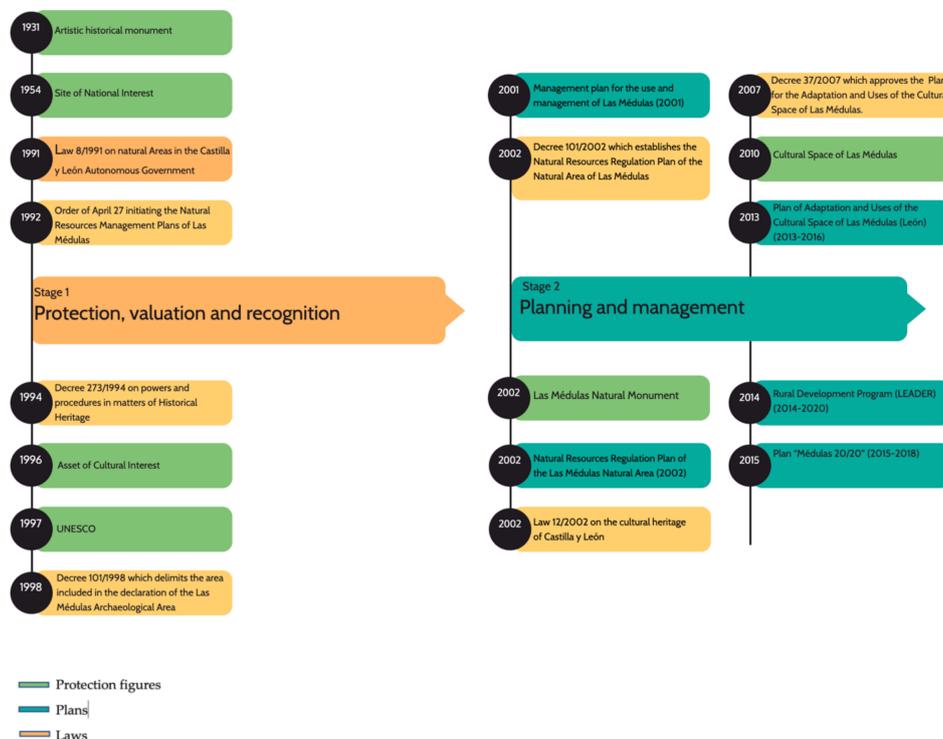


Figure 5. Designation of the main figures of protection, assessment and planning. Source: Author’s own.

In the light of this situation, it would appear clear that the key strategic lines applied through the aforementioned plans have focused mainly on promoting the natural and archaeological heritage,

improving the infrastructures and signage, as well as dissemination and promotion actions. However, success in these areas has been impaired and held up by administrative licenses and requirements, as well as the lack of collaboration and consensus among the various agents involved. Moreover, structural problems such as over-tourism resulting from seasonal demand, car park regulation, extending and improving the complementary offer or the local community's awareness and involvement all remain unresolved.

Nevertheless, the principal difficulty continues to be the lack of a cooperation and coordination instrument capable of guaranteeing the management of the resources by a single body. Indeed, the fact that Las Médulas is defined as an area of multiple intervention due to the extensive and complex network of agents, institutions and companies, the juxtaposition of competences and functionalities of this resource, together with the numerous protection and conservation figures, further complicates the urgently needed integrated territorial management system [60].

In short, and in line with calls for integral, territorial-based and sustainable tourism development [61], the analysis of the planning process indicates that it fails to meet the key characteristics required of an effective planning process, namely flexibility, integration, continuity and shared responsibility.

Firstly, and considering that sustainable tourism planning should be characterized by the necessary degree of flexibility and the executive capacity necessary to adapt and react in a coherent and coordinated manner to changing global, sectorial and territorial circumstances [22,51], there is no evidence that these circumstances are given in the plans drawn up for Las Médulas. They are clearly absent from both the objectives and the strategies carried out; conversely, interventions are based on a model of the distribution of competences and sectorial action.

Secondly, tourism planning requires an integrating and multidisciplinary approach that is not limited to a single sector [26,51]. Indeed, the various dimensions of sustainable development in the territory must be taken into consideration; in other words, plans must be designed not only based on economic considerations, but also considering social, heritage and environmental factors [59]. Yet in the case of Las Médulas, the need for coordinated tourism actions and their interaction with other activities in the region has been overlooked.

Thirdly, any form of planning requires a continued and long-term vision. However, it has been shown that the tourism plans drawn up for Las Médulas have an average duration of three years, with periods that are completing lacking any form of guidance. Rather than global and integrated plans, the majority have been limited to projects with limited financial resources and timespans [8].

Finally, it is assumed that planning should be a shared responsibility that includes the participation and consensus of all the actors involved; a notion that extends not only to those responsible for implementing the various actions but also the target markets [38,51]. However, in Las Médulas, the miscellany of agents and policies resulting from the area's multidimensional nature (mining, territorial, environmental, heritage, etc.), renders any form of collaboration almost impossible. In fact, a detailed study of the agents intervening in the area's tourism planning and management reveals the immense complexity of the situation from both an administrative and institutional perspective (See Figure 6).

Furthermore, cooperation between residents is also a challenging task due to the existence of two, clearly differentiated groups within the local community: those that support tourism activity and those that are clearly against it for a number of reasons (chestnut thefts, occasional instances of over-tourism, parking, water shortages and restrictions, vandalism, etc.).

Finding a solution is far from easy. Nevertheless, the Junta de Castilla y León is currently considering a number of proposals that include a grouping of municipalities for management purposes (called for by the local authorities) or a single, self-financing management body centralized in a Consortium (as proposed by the Autonomous Government and El Bierzo Regional Council on repeated occasions since 2015) and which in principle has sufficient support to be launched in 2021. Both proposals include the creation of a body responsible for an integral, collaborative and sustainable management system that includes the participation of all the administrative bodies with competences

in the area. Las Médulas Foundation would therefore assume the consolidated management of the Natural and Cultural Space.

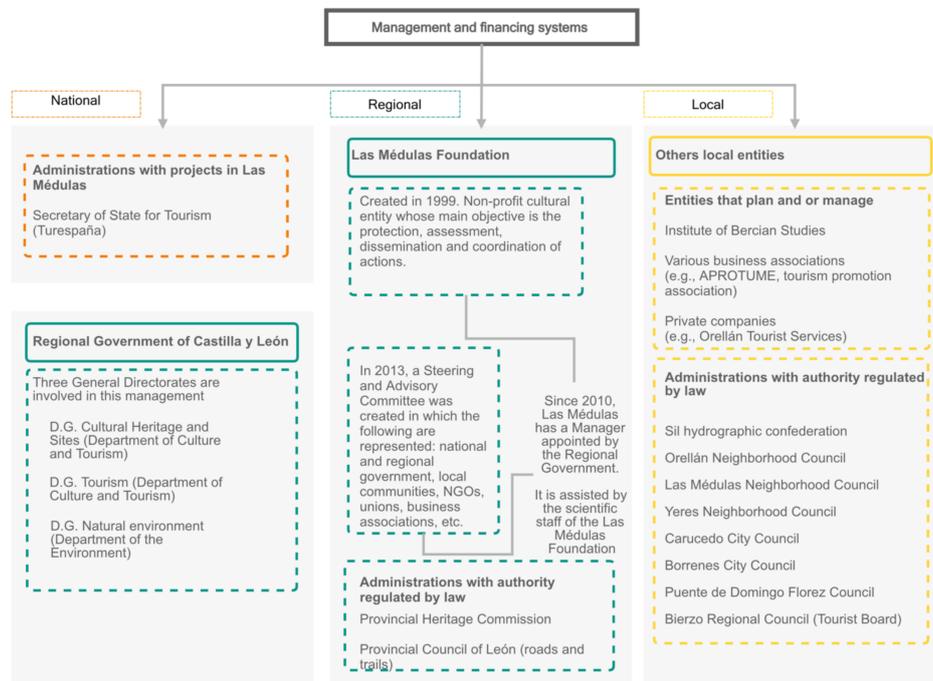


Figure 6. Management and financing systems Source: Author’s own.

## 5. Analysis and Discussion of Results

### 5.1. Residents’ Support for Tourism Development

The impact of tourism on local development depends largely on the perception, opinions and expectations of the local community [62] regarding the value and recognition afforded to heritage assets and their tourism potential. In this case, residents were therefore asked about their perception of the current degree of tourism development (Figure 7) and well as Las Médulas tourism potential (Figure 8).

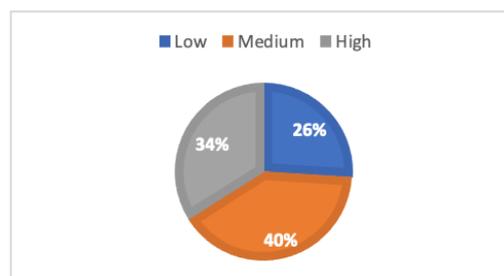
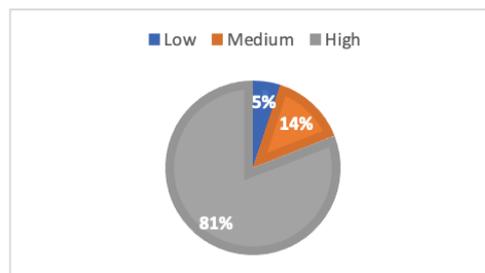


Figure 7. Perception of the degree of tourism development of las Médulas. Source: Author’s own.



**Figure 8.** Perception of the tourism potential of las Médulas. Source: Author’s own.

The results reveal that the local population’s perception is that although the exploitation of Las Médulas as a tourism resource is still in its infancy, it is showing a steady trend towards consolidation. In this sense, the majority of respondents stated that the degree of tourism development is average. Along similar lines, 81% of residents perceive that the tourism potential of this destination over the next 5 to 10 years is high. When planning a destination, this information is highly important since, depending on the results, specific actions should be initiated.

During the course of the fieldwork, conversations with various territorial experts and actors revealed that the degree of tourism development is currently average-low. They claimed that, “Despite the efforts by public administrations to boost tourism in the area, there is a clear lack of entrepreneurship and the level of professionalization remains extremely low. The sector is characterized mainly by family businesses”. They attributed this partly to the fact that “working in the hospitality sector is not particularly valued around here, as the labor conditions in other sectors, and slate quarrying in particular, are considered to be better”. They elaborated further on this, explaining, “What’s needed are more infrastructures and a clear dissemination and promotion strategy”. They went on to add that “Las Médulas has tremendous tourism potential as it offers visitors a combination of archaeological, historical, cultural and natural heritage in a single site that is hard to find elsewhere”, despite the “pronounced seasonality” and the fact that “the tourism model in this destination is clearly lacking in terms of efficiency”, and “it is necessary to overcome a series of obstacles such as the lack of cooperation among agents that points to an uncertain future for this destination”.

As for the principal factors that contributed to establishing this site as a destination, three specific actions were mentioned: “the studies conducted by the Spanish National Research Council (CSIC in its Spanish initials); the promotion and communication actions carried out by José Luis del Olmo, a journalist and President of Las Médulas Foundation; and naturally its inclusion on the UNESCO World Heritage List in 1997”. In fact, nomination for this distinction was considered essential as it defined Las Médulas as a major heritage resource [59] and enhanced its profile as a tourism resource [60], which in turn contributed to raising awareness of the need for a clearly defined planning strategy [63].

## 5.2. Multidimensional Nature of the Tourism Impacts

Another topic of undoubted interest both for planning and for society itself is being able to know which areas of local development are being most benefited or, on the contrary, harmed. In this case, it forces us to conserve the industrial heritage and landscape, generates a more direct relationship between the identity of the territory and the tourist and, of course, increases the number of visitors to the territory. Therefore, one of the greatest difficulties in planning is adapting the actions to the specific territory. This requires knowing the destination in a deep way and, of course, it is inescapable to know the opinion and perception of the local population in order to make decisions [46,57].

In order to identify the multidimensional nature of the tourism impacts perceived by the local population, a list of sixteen items was drawn up which refer to five sets (economic, cultural, political-administrative, social and environmental impacts) in accordance with the information provided by previous research [32,37,41,43].

Regarding the descriptive analysis (mean and SD), Table 3 shows that the various scales of impacts associated with tourism activity display acceptable validity and reliability indexes measured using Cronbach's Alpha: The value for the set of items is 0.87, higher than the recommended criterion although 0.6 can be considered an acceptable cut-off value for exploratory studies [64].

**Table 3.** Descriptive analysis: perception of the impacts of tourism Source: Author's own.

Complete Questionnaire ( $\alpha = 0.87$ )	Mean (SD)
<b>Economic impacts</b> $\alpha = 0.32$	
Tourism is one of the main sources of income for the development of the local economy	3.40 (1.21)
Tourism improves employment for the local population	2.57 (1.06)
Tourism benefits only a limited number of residents	3.57 (1.07)
Tourism attracts more investment to the area	3.0 (1.16)
<b>Total</b>	3.12 (0.67)
<b>Cultural impacts</b> $\alpha = 0.60$	
Tourism boosts the offer of cultural and recreational activities	2.90 (1.09)
Tourism promotes greater cultural exchange	3.44 (1.19)
Tourism offers an insight into the area's history and culture	4.11 (1.01)
<b>Total</b>	3.19 (0.92)
<b>Political-administrative impacts</b> $\alpha = 0.68$	
The money invested by the institutions to attract more tourists has generated new facilities, infrastructures and events suitable for tourism	2.84 (1.18)
Tourism development plans have improved the provision of infrastructure and public services	3.02 (1.11)
Tourism contributes to promoting the maintenance and restoration of the historical and cultural heritage	3.50 (1.18)
<b>Total</b>	3.13 (0.95)
<b>Social Impacts</b> $\alpha = 0.47$	
Tourism contributes to increasing collaboration between local people, companies or institutions to carry out tourism activities	2.52 (1.15)
Tourism causes problems of coexistence between tourists and residents	1.80 (1.00)
Tourism contributes to improving and enhancing the destination's value	3.86 (1.10)
<b>Total</b>	2.73 (0.76)
<b>Environmental impacts</b> $\alpha = 0.85$	
Tourism helps the destruction or deterioration of natural resources and the local ecosystem	2.52 (1.42)
Tourism increases dirt, noise and pollution	2.63 (1.42)
Tourism reduces the tranquility of the municipality and increases overcrowding in certain parts of the municipality	2.70 (1.47)
<b>Total</b>	2.62 (1.25)

Particularly worthy of mention is the cultural impacts scale as it obtained the highest score of the overall set of impacts (3.19 out of 5), with mean scores of between 2.90 (tourism boosts the offer of cultural and recreational activities) and 4.11 points (tourism offers an insight into the area's history and culture). The political-administrative impacts scale obtained a general mean score of 3.13 out of 5 points, similar to that of the economic impacts (3.12 out of 5). There was a notable consensus regarding the assertion "tourism benefits only a limited number of residents" (3.57). As for the social aspects, the mean score was lower (2.73 out of 5), although there was a clear perception that "tourism contributes to improving and enhancing the destination's value" (3.86). Finally, and in relation to environmental considerations, the opinions of the residents surveyed displayed a similar trend to the social impacts (2.62 out of 5).

It can therefore be concluded that whilst arguments in favor of the direct benefits for employment of mining heritage tourism may be weak, those that defend its capacity to improve and promote a destination's image are far stronger [13]. In this sense, tourism is seen as an opportunity for the recovery of heritage assets that would eventually have fallen into an irreversible state of deterioration were it not for an alternative type of activity. In rural destinations, tourism emerges as a dynamic activity yet with a limited capacity to activate the local socioeconomic fabric [27]. It is therefore best to

avoid generating false expectations regarding the capacity for local development in terms of revenue and employment. It must be remembered that mining industrial tourism cannot be seen as the sole solution to the crisis in the areas, but rather as a driving force for development acting in conjunction with other types of tourism such as rural tourism, archaeological tourism, nature tourism and/or active tourism.

Although the analysis of the impacts included the opinions expressed by residents regarding the 16 items, it must be stressed that individuals are more likely to structure and organise their perceptions in accordance with a smaller number of dimensions. Therefore, and in order to identify these underlying dimensions, a factor analysis was conducted using the maximum likelihood extraction and varimax rotation method, complemented with a confirmatory factor analysis. The results, shown in Table 4, indicate several aspects of interest. The analysis reveals goodness of fit and a structure comprising five factors that explain the 55% total accumulated variance (affected by the sample).

**Table 4.** Exploratory factor analysis of the variables that measure the different types of impacts. Source: Author’s own.

Item	Factor				
	MOT1	MOT2	MOT3	MOT4	MOT5
Tourism contributes to improving and enhancing the destination’s value	0.908				
Tourism contributes to promoting the maintenance and restoration of the historical and cultural heritage	0.60				
Tourism offers an insight into the area’s history and culture	0.568				
Tourism contributes to increasing collaboration between local people, companies or institutions to carry out tourism activities	0.555				
Tourism increases dirt, noise and pollution		0.904			
Tourism reduces the tranquility of the municipality and increases overcrowding in certain parts of the municipality		0.843			
Tourism helps the destruction or deterioration of natural resources and the local ecosystem		0.679			
Tourism causes problems of coexistence between tourists and residents		0.435			
Tourism boosts the offer of cultural and recreational activities			0.910		
Tourism promotes greater cultural exchange			0.550		
Tourism attracts more investment to the area			0.431		
Tourism development plans have improved the provision of infrastructure and public services				0.626	
The money invested by the institutions to attract more tourists has generated new facilities, infrastructures and events suitable for tourism				0.510	
Tourism benefits only a limited number of residents				0.409	
Tourism improves employment for the local population					0.699
Tourism is one of the main sources of income for the development of the local economy					0.610
Number of items	4	4	3	3	2
% of Variance	26.837	15.697	8.777	8.390	6.810
Cumulative %	26.837	42.534	51.311	59.702	66.512
Alfa de Cronbach	0.32	0.60	0.68	0.47	0.85
Bartlett’s Test of Sphericity: = 419.825 (gl = 136; Sig < 0.001)					
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) = 0.593					
Cronbach’s alpha coefficient (16 Items) = 0.87					

The first dimension, with the greatest weighting in the factor structure, is made up of four variables and was tagged “tourism value assessment of the image and historical and cultural heritage”, obtaining the highest score (3.49 out of 5). Factor 2 also includes four items and was tagged “social and environmental consequences”. The third underlying dimension was tagged “economic and cultural impact” and included three variables. The fourth factor was classified as “tourism planning and policies”, whilst factor five was termed “financial management of tourism”, obtaining the lowest mean score (2.90 out of 5 points).

Aspects worthy of comment regarding the analysis of residents' support for tourism development in Las Médulas (Table 5), include the fact that the mean score was relatively high (3.37 out of 5). The local population support the notion of Las Médulas as the principal tourism attraction in the area and its greatest heritage asset (with a score of 3.82 out of 5), although the score is slightly lower for the item "I support tourism in Las Médulas because it enables me to get more out of my area" (3.05 out of 5). As for support for actions related to the recovery and reactivation of the industrial heritage for tourism purposes, a mean score of 3.25 out of 5 was obtained. These results show that the site's natural character is stronger than its industrial appeal, and in this sense, it would appear that the initial phases for the development of industrial tourism should include actions aimed at raising awareness among the local population of the potential social and economic benefits mining-industrial heritage can bring to the area [65]. It is therefore essential to involve the community and understand residents' feelings and opinions before introducing any measures to boost tourism activity [29,53,66].

**Table 5.** Descriptive analysis of tourism support Source: Author's own.

Residents' Perceptions of Supporting Tourism Development	M (SD)
I support that the Las Médulas Cultural Park is the singular tourist attraction of the area	3.82 (1.16)
I support tourism in Las Médulas because that way I can enjoy my town more	3.05 (1.11)
In general, I support activities related to the recovery and revitalization of industrial heritage for tourist use.	3.25 (1.18)
Total	3.37 (0.85)
Cronbach's alpha	0.61

Whilst the attitudes of the local community are in general positive and favorable, a key requisite in order to guarantee their commitment and involvement in tourism policies, there is a need to improve their perceptions of tourism as beneficial for the area's economic development and the social well-being of its inhabitants.

Table 6 shows that, based on the factor analysis of the main components and good reliability data, the scale measuring resident's support for tourism is one-dimensional, thereby confirming that the three items share a single common construct, which accounts of the 55% variance. This scale provides a dependent variable for the multiple linear regression conceptual model, which measures perception of the impacts associated with tourism (independent variables) in order to determine the best predictors of support for this type of activity.

**Table 6.** Scale measuring resident's support for tourism (one-dimensional) Source: Author's own.

Items	Component 1
In general, I support activities related to the recovery and revitalization of industrial heritage for tourist use.	0.772
I support that the Las Médulas Cultural Park is the singular tourist attraction of the area	0.741
I support tourism in Las Médulas because that way I can enjoy my town more	0.718
Number of items	3
% of Variance	55.318
Cumulative %	55.318
Bartlett's Test of Sphericity: = 17.909 (gl = 3; Sig < 0.001)	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) = 0.633	
Cronbach's alpha coefficient (3 Items) = 0.32	

A predictive model was obtained (Table 7), which, with a 44% goodness of fit, explains residents' perceptions through a set of predictors that measures the various impacts, showing that Factor 1 "tourism value assessment of the image and historical and cultural heritage" (beta:0.61) and Factor 5 "financial management of tourism" (beta:0.29) and even, albeit to a lesser extent and with a 90% confidence

interval, Factor 2 “social and environmental consequences” (beta:0.19), are the subscales that most influence dependent factor prediction; residents’ opinions regarding support for tourism, all in a positive sense (the greater the agreement with the factor, the most positive the residents’ perceptions). The variables relating to economic and cultural impacts and “tourism policies and planning” had no significant impact on residents’ support for tourism development in Las Médulas.

**Table 7.** Regression analysis. Linear regression based on factor scores Source: Author’s own.

Components	Coefficients		
	Standardized Beta Coefficients	T Value	Sig.
Constant		0.117	0.908
F1: Tourism value assessment of the image and historical and cultural heritage	0.613	5.727	<0.001
F2: Social and environmental consequences	0.190	1.752	0.087
F3: Economic and cultural impact	0.127	1.066	0.292
F4: Tourism planning and policies	0.027	0.230	0.819
F5: Financial management of tourism	0.285	2.595	0.013
R Pearson: 0.710			
R2: 0.504; R2 corrected: 0.447			
Standard error of estimation: 0.51841			

The correlation between the variables associated with the perceptions of residents in communities where tourism activity is carried out and their direct relation with support for tourism development has been the object of extensive study. In line with the results of our study, literature suggests that there is a positive connection between the factors associated with the positive aspects perceived and residents’ support for tourism development, particularly in the case of economic impacts linked to the sector. Furthermore, and following Nunkoo and Gursoy [67], the fact that interventions related to the political and administrative planning in Las Médulas do not determine support for tourism is related to the low level of citizen participation at this level. It must therefore once again be stressed that a key component for the drive and success of a destination is precisely local community support [29], which should therefore play a central role in the planning process, particularly in the early stages of tourism development, as in this case.

## 6. Conclusions

Considerable debate in recent decades has highlighted the need for the integral intervention in the tangible and intangible legacies of mining industrial heritage in order to guarantee its protection and conservation. There is also a need for local and regional plans and a sustainable management system based on the provision of alternative uses of a social, cultural or tourist nature [6,68]. Furthermore, territorial heritage as an asset for development and recognition of its tourist and social functions requires the concerted efforts of all those actors involved in territorial planning and the cultural and tourist management of heritage spaces [60]. Thus, it is important to continue investigating the factors that influence the perceptions of residents, since this helps to define the actions of assessment and planning of the destination [31].

Impact studies are a fundamental input for planning and decision-making in destinations. However, despite the progress made, diagnostic studies of impacts have had little impact on planning practice. That is why this research provides a scientifically based contribution on this issue.

In this sense, the analysis reveals a rise in visitor numbers to Las Médulas and a growing number of tourism businesses. However, tourism development is hindered mainly due to administrative barriers and certain attitudes detected during the value assessment process (multiple agents and institutions with competences in the area, a lack of coordination, insufficient public-public and public-private collaboration, low levels of awareness and involvement of the local population, etc.). These problems prevent the creation of a single, holistic, integral and coordinated planning and management system

that encourages participation in this natural and cultural space, based on a sustainable balance between visitors, residents, organizations, companies and the environment [30]. Nevertheless, some progress appears to have been made in this sense, and determined efforts are underway to take advantage of the good intentions shown by all the organizations involved to create a syndicated management formula that will also further consolidate the position of this natural and cultural space within the Spanish and international context.

The preliminary and exploratory analysis also brings to the fore other key ideas related to enhancing the tourism value of mining heritage. These include a series of positive impacts relating mainly to increasing the tourism value of the area's image and its historical and cultural heritage, as well as the consequences of financial management for tourism, which also help to predict residents' support levels for tourism development in Las Médulas.

At all events, it should also be born in mind that, following the success of certain international mining tourism initiatives, a series of products have appeared that offer practically the same experience, devoid of differentiation mechanisms [7,67,69], as in the case of Las Médulas. Differentiation should therefore form part of any successful strategy [13] that should also take advantage of the synergies with other similar offers and networking with other areas [6].

Despite the fact that the results cannot be extrapolated to other locations due to the intrinsic characteristics of the area itself and the exploratory nature of the study, given that the sample size prevented more sophisticated statistical analyzes, it is considered that they are of special relevance for the Agents and institutions responsible for the planning and management of mining heritage tourism.

The research findings suggest a number of priorities, such as analyzing sustainability from the perspective of stakeholders. In fact, post-industrial heritage care becomes an interesting implementation of the principles of sustainable development and it has been shown that both the participation and support of the local community for tourism is essential for the sustainable development of tourism [30].

Likewise, new perspectives are opened for additional studies that are necessary for a deep understanding and development of mining tourism. Along these lines, it is worth highlighting the need to focus more on the search for tools that make it possible to strengthen the emotional ties of residents with their local heritage, as well as to satisfy the interests of the actors involved and encourage their support for tourism activities in zone [35]. The application of a longitudinal research approach should also be considered in order to compare and contrast the resulting differences.

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