Lousal: an old mine, a recent dream, a new reality

Lousal: uma antiga mina, um sonho recente, uma nova realidade


Abstract: The mining village of Lousal (Grândola, Portugal) is currently an international example of success in socio-economic, environmental and mining heritage rehabilitation. The Lousal VHMS mine worked continuously between 1900 and 1988, exploiting pyrite as a sulfur source for fertilizers production. The RELOUSAL program resulted from the joint efforts of the Municipality of Grândola and the mine owner company - SAPEC, SA. The program is responsible for the restoration of the mineshas and conversion of the old power plant into a mining museum. The main warehouse gave place to a regional restaurant, the mine offices were transformed into a handicraft centre and the administration house was converted in a rural hotel. Some other mining facilities gave rise to the Mine of Science-“Ciência Viva” Centre, which promotes non-formal educational activities devoted to Science and Technology. The “Ciência Viva” activities at Lousal represent a very strong attractor for public that definitely changed the daily life scenario to which this territory appeared to be condemned. More than fifty researchers coming from different institutions – universities, research institutes, museums and the Portuguese Association for Industrial Archaeology – and covering many different fields in science and technology (e.g., geology, biology, chemistry, physics, mathematics, engineering, computer graphics) have already been somehow involved in the RELOUSAL program. In particular, the strong commitments of the “Ciência Viva” National Agency and the University of Lisbon, through its Faculty of Science, have raised very high the scientific standards of the whole initiative.

Keywords: Lousal Mine, Mine rehabilitation, RELOUSAL program, Iberian Pyrite Belt.

Resumo: A aldeia mineira do Lousal é, presentemente, um exemplo de sucesso a nível internacional na reabilitação ambiental e socio-económica de património geomórfico. A mina de sulfurolitos maciços do Lousal operou continuamente entre 1900 e 1988, para extração de pirite destinada ao fabrico de adubos. O programa RELOUSAL resultou dos esforços combinados do Município de Grândola e da empresa proprietária da mina – SAPEC, SA. No âmbito deste programa foram restaurados os antigos malacates da mina e convertida a antiga central eléctrica num museu mineiro. O antigo armazém central deu lugar a um restaurante regional, os escritórios e laboratórios da mina foram transformados num centro de artesanato e a antiga casa da administração convertida num hotel rural. Um plano de reabilitação ambiental foi definido e promovido pela EDM (Empresa de Desenvolvimento Mineiro). Algumas outras instalações da antiga mina deram lugar à Mina de Ciência - Centro Ciência Viva do Lousal, entidade dedicada à promoção de atividades de educação não formal para a divulgação de ciência e tecnologia. As atividades “Ciência Viva” no Lousal, constituem um forte ator para públicos à aldeia e alteraram definitivamente o cenário de abandono a que este território parecia condenado. Mais de cinquenta investigadores, oriundos de diferentes instituições – universidades, institutos, museus e Associação Portuguesa de Arqueologia Industrial – cobrindo diferentes ramos da ciência e tecnologia (e.g., geologia, biologia, química, física, matemática, engenharias, computação gráfica) estiveram já, de algum modo, envolvidos no programa RELOUSAL. Em particular, o forte comprometimento com o programa da Agência Nacional Ciência Viva e da Universidade de Lisboa, através da sua Faculdade de Ciências, tem sido responsável por colocar num plano muito elevado o nível de excelência e de exigência científica da iniciativa no seu conjunto.


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1. Introduction

The closure of a mine always has significant impacts on the local economy and on the well being of the community. Presently, it is accepted that mine closure requires the return of land to a viable post-mining use, and that the socio-economic impacts of the closure must be assessed and managed. However, unfortunately, in most cases in the past, both in Portugal and Spain, when mining operations ceased, mines were boarded up and abandoned, as little environmental obligations were imposed by law. The safety, environmental and social risks arising from badly conducted mine closures resulted in severe distress for communities due to environmental, social and economic collapse.
The Lousal mine was an important massive sulphide deposit of the Iberian Pyrite Belt located in its NW sector, in an area limited to the N, E and S by the Tertiary sediments of the Alvalade basin (Schermershorn et al., 1987; Matos & Oliveira, 2003). The Lousal deposit consists of several ore lenses that are lined up along 1.5 km length in strike (Strauss, 1970). It consisted of about 50 Mt of ore at 1.4% zinc, 0.8% lead and 0.7% copper (Strauss, 1970). The massive sulphide mineralization occurs in close dependence to felsic volcanic centres, where intense ore-forming hydrothermal activity led to extensive chloritic-sericitic alteration and stockwork mineralization (Fernandes, 2011). The mine was active between 1900 and 1988 and part of its surface infrastructures are rather well preserved. The Lousal mining village is currently being rehabilitated not only as a geological and mining heritage site, but also as a centre for education for science and technology and a destination for tourism of nature, culture and patrimony. Here, we address the main components of this successful rehabilitation program.

2. An old mine

The chronology of the lifetime of the Lousal mine is relatively simple (Rodrigues, 2005). Although the area shows several signs of mining activity since the Bronze Age (ca. 3300 BC), with particular emphasis on constructions probably built for defence as well as for ore storage, the “modern” discovery of the deposit only took place in 1882 by a local farmer. Between 1900 and 1934, the exploitation rights were property of several individual persons and companies, including the company Henry Burnay & Cia, which exploited the mine for about one decade. In 1934, the mining lease became property of the Société Anonyme Belge des Mines d’Aljustrel, which ran both mines (Lousal and Aljustrel) for two years. Finally, in 1936, the Belgian corporation Société Anonyme Mines et Industries S.A., which preceded SAPEC, became the owner of the Lousal mine. SAPEC still owns the mine despite the shut down of the operation in 1988. The urban structure of the Lousal village is centred on the buildings related to the mining activity – headframes, workshops, stores and laboratories – and presents a uniform volumetry, with buildings spread out over all the mining perimeter. Besides the mining buildings, there are two other groups of structures in the area: the social support buildings – medical ward, school, church and market – and the housing buildings, including accommodation for the miners and for the technical personnel, and the administration building. In 1958, Frédéric Velge, son of Antoine Velge, the main holder of Société Anonyme Mines et Industries, S.A, became director of the Lousal Mine and opened an epoch of great expansion for the mine. With the help of the on-site geologist Günter Strauss, he modernized the management and introduced new methods of mechanised mining production. The closure of the Lousal Mine, in 1988 followed the current unsustainability of sulphur extraction from pyrite.

3. A recent dream

The name RELOUSAL stands for REvitalization, REnewing, REcovery and REHabilitation of community life in the Lousal village. The program required a solid institutional framework, which catalysed the joint efforts of the mine owner - the SAPEC Corporation - with the local authorities - the Municipality of Grândola -, leading to the creation of the Frédéric Velge Foundation. Less than ten years after the closure of the mine, it was decided to promote an integrated development program in Lousal, encompassing several complementary features. The aim of this program was to rehabilitate the village in environmental, economic and social terms. Emphasis has been given to the cultural and scientific aspects, but the touristic potential of the whole project was strongly valued as well. Several facilities have been created in the framework of RELOUSAL, aimed at adding value to the Lousal mining heritage via reuse of the industrial complex, equipment and objects of the old mine. The positive impacts of the program in terms of socioeconomic regeneration of the local community have been notable. Since 1996, the RELOUSAL program has supported a number of different activities and projects of different nature, including partial re-accommodation of the resident population, professional training for the ex-miners and their families, promotion of handicraft activities and family-scale manufactories, public-ware equipment, a handicraft centre (1999), a restaurant in the main storehouse of the mine (“Armazém Central”, 2000), patrimonial valorisation, soil decontamination, reforestation and a visitor welcoming centre (2001). In 2003, a local technical office of the Grândola Municipality was installed in Lousal, and, in 2005, a charming hotel located in the ancient house of the mine administration was inaugurated (Sta. Bárbara Lodge). The Urban Plan for the village was formally ratified in 2007, fuelling the requalification of the urban space, the marketing of touristic projects and the internationalization of the whole initiative.

4. A new reality

A rehabilitation plan directed to reclaim the Lousal contaminated area was defined by EDM (Empresa de Desenvolvimento Mineiro). Due to the RELOUSAL program, the strategy adopted by EDM to the Lousal area aimed to preserve as much as possible the memory of the mining activities, with significant protection of the mining landscape, essential to the development of mining heritage projects (Matos et al., 2008). Their intervention was delineated to confine within the impacted perimeter the environmental aggressions identified, and sort them out without obliterating from the landscape the visual impressions left by almost a century of mining. The contamination sources at this area were assessed and a variety of combined interventions were already partly implemented.

One of the first big projects that have been completed under the scope of the RELOUSAL program was the mining museum. The project was promoted by the Frédéric
Velge Foundation, and developed between 1998 and 2001 with the technical support of APAI, the Portuguese Association for Industrial Archaeology. This industrial museum was installed in a large building formerly hosting the electrical plant of the mine (“Central Eléctrica”). The installation accommodates several rehabilitated equipment that possess valuable significance from an industrial archaeological standpoint. Among the pieces contained therein standout a number of huge electrical alternators and air-compressors that closely follow the major steps of the evolution of the mining exploitation methods through time (Tinoco et al., 2002). The museum has multiple focal points, including an exhibition, inaugurated in 2006, of over fifty scale-models made of wood and metal that perfectly represent machines and devices used for mining exploitation during the 19th century.

The Mine of Science - “Ciência Viva” Centre of Lousal was inaugurated in 2010. It was set up in a building that was associated with the past activity of the mine (geology office, lanterns room, miners’ locker room and bathhouse). The exhibition strategy was conceived for a large-spectrum audience in terms of age, education and social or geographic origin. The general idea consists of taking advantage of the old mine environment to use the concept of “georesource” as a window opened through a wide range of fields of knowledge that include the natural and exact sciences, applied technologies and several fields of engineering. In the Mine of Science, one exploits science and extracts knowledge, always with interactivity at the fingertips. There, the visitors may discover some of the most fascinating phenomena of the world of science and technology, through tens of interactive experiences and “hands-on” exhibits. The Centre is extremely dynamic and promotes also many educational activities that go far beyond the walls of the building: guided visits to the open-pit, geo- and bio-field trips, astronomy observations, scientific camping, among many others.

In three years, more than thirty six thousand people, including scholar groups, families and tourists, have visited this science centre, and many other persons visited or benefited from the remaining components of the RELOUSAL program. Lousal also receive frequent visits from under- and post-graduate students, professors and researchers, both from Portuguese and foreign universities, mostly interested in ore geology, mining engineering, environmental sciences and sociology. These circumstances completely changed the daily life scenario in Lousal. The dynamic activity of the “Ciência Viva” Centre and its team brought a new reality to the village, pushed forward new economic activities, justified new job opportunities for the local population, and for the youth in particular, and opened a new cycle in the revitalization program initiated almost two decades ago.

The rehabilitation of Lousal is an on-going process that has already reached a point that allows one to look at the future with justified expectations. An important evidence for this is the recent recognition made to the Municipality of Grândola by PROGEO, which have attributed the 2013 Geoconservation Award to the Lousal mining village for its rehabilitation program and consistent defence of its mining patrimonial heritage. The steps forward that have been pursued so far have put together, in a consolidated way, a number of relevant partners with different, but complementary and compatible motivations. The key words for the future are now consolidation, step-by-step development and economic sustainability. Sooner or later, Lousal should pass from a mining village under a particular, and opened a new cycle in the revitalization program, to a territory able to attract investments and where better economic opportunities may emerge.

References