

Questions from the Underground Promotion Policies for Decommissioned Small and Medium Miningsites in Italy*

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Abstract

The contemporary landscape is made up of stratifications of settlements, environmental, historical, infrastructural and economic networks that were moulded by the passing of time. In some cases, the modernization processes were effective, assigning the territories a recognizable role. In other cases, the transformations forced themselves onto large areas, emptying them of their role and meaning: unresolved locations hanging in the balance between a faded history and a future to be reinvented. Decommissioned mining sites are an example of this condition. Until recently they used to be strategic production locations while currently they are marginalized territories burdened by a challenging heritage: environmental degradation, economic and social crisis, and marginalization. The purpose of this article is to present a research made on decommissioned medium and small size mining sites in Italy, whose story often goes unheard. Starting from multiple European experiences, we compare six Italian experiences, which were put in place despite the challenging domestic legal framework. Eventually we analyse the potentials and weaknesses of the small mining basin of Majella (Abruzzo) - between the national park and the conurbation of the valley and the Adriatic coast - pending proper promotion policies.

Keywords: Mining Sites, Decommissioning, Recovery Projects, Local Development, Inland Areas, Majella

1. Introduction

For a long time in Europe the coal, fuel and metal mining activity contributed to define advanced economic and industrial systems. It favoured remarkable migration flows, which redesigned the settlement geography of large territories. Mining areas, together with the complementary activities of industrial processing, created never-before-seen landscapes, transforming settlements and natural environments. These changes affected territories and economies of the large coalfields of North-Western Europe, as well as the medium and small mining basins of the rest of the continent. Starting from the second half of the twentieth century the closing of mining activities and the abandonment of the relevant areas left common heritages in very different territorial settings. The territories concerned, albeit geomorphologic ally different, economies and settlements show common signs, which can be divided into:

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- *Environmental degradation.* The typical mining landscape is made up of large excavation areas and underground tunnels with problems of static safety and hydro-geological disruption, soil and water contaminated by heavy metals, radioactive minerals, chemicals and settled toxic dusts. The nearby settlements have inherited obsolete refineries and processing plants, which leave a sign of degradation on the landscape for their size and on the environment for the quality of the production cycle;
- *Economic crisis.* With the closing of the mining industry, the local communities suffered a remarkable decline, with serious consequences of unemployment for the inhabitants and problems for the local administrations;
- *Social problems.* The decrease in jobs forced the active age population to leave their hometowns. The resulting demographic squeeze and the ageing population reduce the opportunities to start new projects of local development;
- *Governance problems.* Often small local administrations are forced to tackle challenging problems. The institutions struggle to find new solutions of economic relevance, as well as to start complex and burdensome projects of environmental and landscape recovery for which ordinary planning is ill-suited;
- *Legal problems.* The legislation on decommissioning is poor and poorly detailed, favouring conflicts between authorized concession holders and institutions on who is responsible for the implementation of safety measures of the sites and the reclamation works;
- *Challenging creation of a future-looking image* - for many of these areas at the margins of the large flows of modern society, it is difficult to plan and bring to life new development scenarios.

2. Appraisal on post-mining regions

The question of post-mining has a political, economic and cultural relevance in the European debate, in the wake of the experiences of territorial reclamation and the *governance* proposals put forward for large coal fields: the coal fields of Wales in the United Kingdom, of Ruhr (GANSER, KRAU, NOEBEL, 1989) (LONGO, POTZ, 1996) and of Saar in Germany, of Wallonia in Belgium, of Nord-Pas-de-Calais in France, the metallic ore bodies in Cornwall and West Devon in the United Kingdom.

For the large mining basins the reclamation policies represented a challenge supported by the entire nation, which involved national governments, local administrations, the scientific community, the citizens and companies.

The sites of the small and medium mining basins are affected by similar problems. However there are greater problems with reference to possible policies; first of all for their coverage of the territory but also because they are located in mountain areas, often at hydro-geological risk, marginalized or at the borders and far from the main roadways. These areas frequently associate their decline with that of large surrounding territories, already subject to abandonment processes.

They represent an additional piece of the mosaic in the complex geography of the inland areas and an extra burden in terms of investment in works for the implementation of safety measures and environmental recovery of the ground and water. The issue of post-mining is tackled in the different countries in different ways. In Europe and in Italy, multiple boards of experts have dealt with potential strategies and experimented projects with reference to the specific needs of the territories suffering from the crisis. Former mining sites may be considered as a public asset, a cultural and economic externality and locations to experiment and research environmental and cultural specificities in order to identify enhance and support the local potential. The ReSource project (2009-2012) goes in that direction. Promoted by seven regions of central Europe - Austria, Germany, Poland, Czech Republic, Slovenia and Hungary - which share the theme of post-mining of small and medium mining sites, the project was implemented as part of the Central Europe Programme and co-financed by the ERDF (European Regional Development Fund).

It consists of 50 case studies - 6 in Austria, 7 in the Czech Republic, 23 in Germany, 5 in Hungary, 3 in Poland and 6 in Slovenia - on which it proposes the main criteria and opportunities of local development intercepting the natural and cultural potentials according to an integrated approach.

For the first time the condition of a decommissioned mining site is not associated to the exclusive notion of heritage but to the notion of potential, however not excluding the aspects concerning the protection and preservation of the heritage, such as the enhancement of the decommissioned facilities for tourist purposes or their use. The notion of *potential* matched with that of *heritage* associates innovative and modernizing actions such as to offer growth opportunities to the generations who have not experienced the productivity of the sites. Among the case studies taken into consideration by the ReSource project, the most advanced policies concern the preservation of the historical memory of the mining activity that helped define professional positions, cultures and traditions of entire populations. However the objectives of "remembrance" and of a museum-type display are treated as a vehicle to create new scenarios for the local societies: the mining landscape, ultimately, should evolve and be part of contemporary society and culture, generate modernization and environmental recovery processes (WIRTH, CERNIC MALI, FISCHER, 2012).

For each of the 50 areas such enabling potentials were found whose promotion might determine, depending on character and prevalence, the integrated approach for the policy scenarios. They concern the natural Potential - identified as the components of the natural environment such as the ground, the air, the water, the fauna, which represent sources of renewable energy, biomasses and natural heritage - and the cultural Potential - made up of the set of infrastructures, objects but also knowledge, customs and traditions of the mining culture which are a strength of the places concerned. The projects selected as best practices give different priorities depending on their approach: some target the development of the natural potentials, others of the cultural potentials. In many cases the objective was a successful integration between nature and culture.

The case studies were analysed according to the following common criteria:

- *Types of projects and employment policies.* Most projects under review are mainly oriented to the implementation of economic activities in the sectors of tourism, culture and hospitality, teaching, scientific research, S.M.E.S. (Small and Medium Sized Enterprises). Most of these new business activities have generated in any case a much lower number of jobs than that of the previous industry;

- *Policy promoters.* The main project promoters are public administrations (municipalities, regions...) but there are also cases in which volunteers and citizens associations have decided to start and support promotion projects and in some cases even public-private partnerships have done the same;

- *Financing.* Most financing comes from the national governments with private participation or from community Funds (LEADER, INTERREG, ERDF). The local administrations only give a marginal contribution;

- *Players involved.* The implementation and the management of the policies are mainly the responsibility of public administrations, marginally of non-governmental organizations and private companies;

- *References.* UNESCO played an important role with reference to the circulation of the information among the various entities on the field and of promotion thanks to the recognition of some World heritage sites. From a legislative point of view, a specific European directive on the issue of post-mining is missing; most policies refer to the legislation of individual States, however such legislation is often poor;

- *Boards of experts.* The set-up of Boards of experts allowed extending participation to research entities, universities, chambers of commerce and professional experts.

In the wake of the gathering and processing of this information, the work of ReSource eventually proposes the assessment of the effectiveness of individual projects according to homogeneous parameters such as efficiency, sustainability, involvement of the population, legitimacy, innovation and transferability of the experience.

3. The Italian experience

3.1. Background numbers

Italy is rich of underground resources, not much for their abundance but for the variety of existing minerals. The mining activity also played an important role in the economic and social life of the country by virtue of the governmental policies started by the National Unity Government (1861). After the Second World War, like in other European countries, in Italy as well the mining sector was affected by a crisis due to the obsolete mining techniques and the competition of foreign markets. In the 1980's most sites were also permanently closed due to the increased attention to environmental problems like the protection of ground and water. To date the only active sites are for ceramic material and marl, in open cast quarries.

The data provided by the Institute for environmental protection and research (Istituto Superiore per la Protezione e la Ricerca Ambientale - ISPRA, 2009) report that in Italy 2,290 mining sites were active between 1870 and 2006 - 684 of which in open cast quarries, 2,198 underground and 109 mixed. The mining concessions currently are 300, 194 of which are active. The greater concentrations are in Sicily, Sardinia, Tuscany, Piedmont and Lombardy; in general the mining sites are widely spread in the national territory. ISPRA also started a census of the sites, which have in place or have just started a promotion policy. 91 sites were identified, a small quantity compared to the total number. The regions, which implemented a larger number of promotion policies, are Tuscany (19 sites), Lombardy (16 sites), Sardinia (14 sites) and Piedmont (13 sites).

The main policies cover:

- Museum. The promotion projects implemented in Italy, concerning small mining sites or even individual caves, provide for the opening of a museum in the reference city centre or in processing facilities and in ancillary facilities instead of the mining site;
- Park. In the places where the mining activity has left a deeper mark in the territory and its inhabitants, actual parks were opened, set up on the basis of the wealth and variety of the underground and the complexity of the occurred transformations. This is the case of Sardinia and Tuscany;
- Combined action. In some cases and for medium-sized sites, a combined action was put in place, the enhancement of the sites being just one of the multiple effects of the project that becomes a driver of local recovery. The scope of the work is widened starting processes, which affect the farming and pastoral tradition, the cultural heritage, the environment, local crafts and productions.

3.2. Legislative issues

The national law governing the mining sector dates back to 90 years ago (Royal Decree 1443/1927 "Legislative standards governing research and extraction in the kingdom") and makes a distinction between mines and quarries with reference to the product category of the extracted material, notwithstanding the fact that the extraction happens in a tunnel or in open cast. The difficulties concerning the management of the reconversion phase also refer to the ownership regime since the mines are public property of the State under concession, while the quarries belong to the owner of the ground and are subject to authorization. More recently, the Code of Cultural Heritage and Landscape (Legislative Decree no. 42/2004) enters the "mining sites of historical and ethnic-anthropological interest" in the cultural heritage, however submitting their recognition to the declaration of cultural interest, unless they are not-for-profit public or private property.

The inadequacy of the reference national regulatory framework provides that the policies concerning the implementation of safety measures can only depend on the rules of the individual Regions, which however do not ensure the necessary funds for recovery. The problems of the national regulatory framework, the small number of Regions which are going in that direction, together with the challenges connected to the set-up of integrated initiatives to support these inland areas result in a small number of actual projects. However the experiences either accomplished or under way, solve this problem through multiple responses with reference to the objectives, project strategies, governance and financing method.

4. An overview of practices

Italy, unlike the rest of the European continent, where different sizes of projects are implemented, is characterized by medium and small mining sites and in some cases individual sites. The six experiences proposed in this paper were chosen in order to highlight the variety of the processes, the multiple solutions and opportunities.

4.1. *Ecomuseum of Val Germanasca "SCOPRIMINIERA" (Piedmont)*

Five natural parks of remarkable landscape and environmental value surround the concerned territory, which was rich of many minerals (talcum, graphite, coal, copper and silver).

The promotion initiative of the talcum mines of Val Germanasca started in 1993 by the Mountain Communities Valli Chisone and Germanasca, in collaboration with the French mining area Briançonnais. The promoting entities interacted with other European experiences, coordinating a programme of exchange and experiences co-financed by the EU (FEDRE fund, Fonds européen de développement régional). The main interlocutor was the French municipality of Argentère La Bessée, site of silver-bearing lead fields, active since the middle Ages.

The two locations, geographically close (on the edge of the Alps), between 1994 and 1997 started a common programme financed by the INTERREG funds of the European Union, especially designed for cross-border projects. The programme contains: studies and researches to inventory decommissioned infrastructures, sites and facilities and collect visual and oral proof; market surveys to guide the tourist offering; preparation of executive projects for the refurbishment of tunnels and products; territorial tourist promotion.

In 1998 the mines "Paola" and "Gianna" were re-opened and an Ecomuseum was opened for the promotion of the general heritage, not just the mining heritage. The implementation and management phases provide for the active participation of the local community.

In the absence of a specific regulatory framework, the policy was accomplished through mining concessions. In Italy mines are part of the public assets of the State; the industrial companies can only operate under concessions issued for a limited time frame. In this case, in 1996 the Mountain Communities replaced LUZAC, concession holder until 2032, and were awarded the management and maintenance of the site. The Val Germanasca experience is an exemplary case with reference to the legal framework, the role played by the stakeholders (public bodies, private companies, associations...) in the design and management of the promotion policy; eventually, the interest of a coordinated project in two Countries of the European Union.

4.2. *National Technological and Archaeological Park of the Grosseto metal-bearing Hills (Tuscany)*

In the metal-bearing hills of the province of Grosseto (Tuscany) the mining activity has been active since the Etruscan period. The copper, lead and silver mining activity was abandoned and recovered over and over again during the centuries. In the 1800's Belgian and French companies to start its industrial exploitation reopened it. In 1899 the Italian company Montecatini replaced the foreign companies, mining pyrite to make sulphuric acid. This phase caused remarkable transformations in the territory. In addition to the construction of a 40 km long cableway and industrial plants, settlements with workers' dwellings were built and still exist.

Between the 1980's and 1990's, the mining activity of pyrite showed signs of a crisis both due to foreign competition and to the changes of the industrial production processes that favoured the mining of sulphuric acid from sulphur. The end of the mining activities and the crisis of the iron and steel industry in Piombino caused a crisis in an extensive area of Tuscany. Between 1993 and 1999, after obtaining the funds, the municipalities of the mining district of the metal-bearing hills started the feasibility studies for the enhancement of the mining heritage. In 2002 the National Archaeological and Technological Park of the Grosseto metal-bearing hills was set up, including 34 sites: 21 mining areas, 5 iron and steel plants, 4 medieval castles, 2 ores transportation plants and 2 geothermal plants. The Park is a multi-themed park and its purpose is to promote the landscape, geology, archaeology, art, history and industry of the local technological development. In 2010 the National Technological and Archaeological Park of the Grosseto mineral-bearing hills was recognized as geopark of the UNESCO Global Geopark Network (ITALIAN GEOPARKS, 2013).

According to the standards of geoparks, the objective is to give the visitors an in-depth knowledge of the wealth of the underground, the mining and production methods developed over time and the transformations of the territory connected to the mining activities. As a consequence landscape, environment and historical-cultural heritage make up an offer divided into: Routes of the minerals (iron, alum, copper and silver, lignite, pyrite) and Themed itineraries (Itinerary of the Castles, Itinerary of geothermics, Itinerary of Metallurgy, Itinerary of the Mines). Being part of the UNESCO Global Geopark Network and the territorial extension of the project are an exemplary case.

4.3. Archaeological and Mining Park of San Silvestro – Parks of the Val di Cornia (Tuscany)

The Network of Parks of the Val di Cornia, of which the Archaeological and Mining Park of San Silvestro is also part, was created by five Tuscan cities (Piombino, San Vincenzo, Campiglia Marittima, Suvereto, Sassseto) for the recovery and enhancement of environmental, archaeological and industrial heritage on the territory. The cities that are part of the project started their cooperation coordinating the objectives of their town plans and identifying the areas to be converted into Park. The industrial crisis, which hit the Val di Cornia in the 1990's, gave the municipal administrations an additional reason to design new scenarios of local development investing in the environmental, historical and cultural heritage. In the mid-1990's the Tuscany Region set up the park of Val di Cornia, containing the areas identified by each city, and establishes the company Società Parchidella Val di Cornia S.p.a., a public-private company whose purpose is to manage the parks together with the local administrations.

The Archaeological and Mining Park of San Silvestro is part of the network of Parks of Val Cornia, fostering the industrial heritage linked to metal mining in the city of Campiglia Marittima. A team involving experts and researchers coming from various European universities prepared a masterplan for the definition of the guidelines for the recovery and promotion of facilities and areas of archaeological and industrial interest. The policies provided for by the Masterplan are financed by funds earmarked by the European Union (Project RESIDER I and II) and by other funds allocated by the Tuscany Region. This experience highlights two interesting aspects: the quality of a process started and managed by local administrations working together for a common goal; the quality of the projects enhancing the landscape and its typical character such as the natural scenarios, cultural, archaeological industrial heritage.

4.4. Mining village of Formignano (Emilia Romagna) and Mining Museum Park of the sulphur mines of Marche (Marche)

The promotion projects of mining and industrial sites linked to the mining of sulphur in Romagna and Marche, both concern small towns. The initiative of recovering traditional mining locations was fostered by the local community. In the case of the Mining Village of Formignano, twenty years after closing the sites in the 1960's, the "Company of Research and Study of the Mining Romagna" was established with the intention of promoting the proof of the mining archaeology and promoting the heritage of documentation produced by the study and preliminary research activities. The Company, financed by local banks and donations, received the advice of experts from universities and administrations.

The participation in the MINEU 2000 project, financed by the European Union, allowed the company to share knowledge and experiences with other European regions with similar tradition and objectives. In 1999 the city of Cesena purchased the entire mining area with the intention of putting in place a recovery project that provided for the opening of a museum area, the natural preservation of the neighbourhood, the maintenance of the pathways and the support of resort and shopping businesses for sustainable tourism. The project has not been implemented yet and the only implemented activities are those taken by the Research Society that, in addition to historical research of oral and material finds, promoted cultural initiatives linked to popular folklore of the life of miners (seminars and temporary exhibitions) and the organization of guided tours.

The promotion experience of the sulphur mines in Marche was born out of the intention of the Organization for the promotion of the territory Associazione Pro Loco of Perticara that, since 1964, after the mine was closed, set up the Historical Mining Museum "Sulphur". Since 2002, the museum is located in the premises of Cantiere Sulfureo Certino purchased by the city of Novafeltria. Until 2005, when the national park "Mining Museum Park of the sulphur caves of Marche" was established, the management of the museum compound was curated by Organization for the promotion of the territory Pro Loco di Perticara. The establishment of the park provided adequate legal recognition and allowed for the creation of a network for the enhancement of the Marche sulphur mining areas (Protected Areas of National Interest), of which the Perticara cave, the first one on which a promotion itinerary was experimented, is a hub.

This experience is significant since it was implemented by local associations and supported by local administrations; it managed to find support from the State aid through the establishment of an extensive multi-site park.

4.5. Ecomuseum of the iron caves and foundries of Calabria (Calabria)

The Bourbon caves mines are a significant proof of the industrialization of Southern Italy during the Kingdom of the Two Sicilies. The iron caves are born on the territory of the Serre (Aspromonte), a mining site which guaranteed abundance of raw materials since the 1600's. With the passing of centuries and thanks to technological innovation, the Calabria industrial activity was subject to a fast production and territorial expansion: shafts and tunnels of mines, washeries, foundries, workshops and hydraulic plants (mills and hydroelectric power stations) guaranteed the production of iron products for civil and military purposes. The exploitation of this mining area and the relevant industrial facilities characterized the territory until the establishment of the national unity government (1861). In order to preserve this extensive industrial heritage, in 1982 the Calabria Industrial Archaeological Association (Associazione Calabrese Archeologia Industriale - ACAI), drafted an approximate project to build the Ecomuseum of the iron caves and foundries of Calabria with the objective of protecting the heritage of forest, mineral, hydrogeological, infrastructural, landscape and cultural resources which contributed to build the identity of the territory. The Ecomuseum accomplishes an integrated enhancement by identifying "*five areas of primary interest of enhancement*" whose purpose is to favour economic and cultural actions functional to the local recovery and development. The Regional Plan of the industrial archaeology areas and facilities, within the financial programming 2007-2013, finances new actions to strengthen the image of the ecomuseum and the territory. The main ones concern the use of ICT technologies and the recovery of other industrial facilities.

This case is exemplary since this mining area contains a large number of products dating back to the period before the intensive industrial exploitation, which characterized the XIX and XX century. Additionally, the Ecomuseum of the iron caves and the foundries of Calabria represents a rare case of enhancement of a mining area of Southern Italy, whose works were accomplished thanks to the financial allocation by the regional programming (2007-2013).

4.6. Geological and Mining Park of Sardinia (Sardinia)

Sardinia represented the most important coalfield in the Italian territory, both by extension and coverage of the entire regional territory, and by intensity of industrial exploitation.

The history of the region has always been tied to the abundance of raw materials and their exploitation since pre-history: pyrite, coal, manganese, copper, iron and lead are some of the minerals whose extraction drew population and moulded the landscape. Numerous researchers and enthusiasts, after the decommissioning of the sites and the closing of the industries, set up an association to promote the enhancement project with the support of the cultural associations, the population and the former miners.

At the end of the 1990's, after the closing of most mining sites, the Autonomous Region Sardinia, together with EMSA (Sardinian Mining Body) and local authorities, started the process for the establishment of the Geological and Mining Park. The Geological and Mining Park of Sardinia, established in 1998 (by final decree in 2001), covers a territory of 3,800 square km, belonging to 81 different municipalities.

The Park Consortium decided to establish a profitable relationship with the local administrations and with the Associations in order to strengthen the territorial consistency and allow for an efficient management of resources: if owners of the above-the-surface mining facilities, the municipalities may directly proceed to their reclamation and recovery by drawing from regional, state funds or funds earmarked by the European Union; the Associations have the responsibility to check the consistency of the individual activities with the overall strategies. A leader Project on EU funds financed some of the most important activities, such as the recovery of the Great Cave of Serbariu in Carbonia. Currently, the Park Consortium is engaged in the accomplishment of actions for the enhancement of the territory, environmental sustainability and the preservation and circulation of the Sardinian mining culture. These actions include the establishment of the Centre for Environmental Education (CEAS), at the former cave of San Giovanni, for the circulation of Environmental Education (EA) model that is not just a simple study of nature, but the driver for the promotion of good practices and Education to Sustainable Development (ESS), that concerns the economy (poverty, consumption) and the society (cultural differences, rights and peace) in addition to the environment. The Geological and Mining Park of Sardinia is the right place to circulate an innovative educational model respectful of the earth and sensitive to the employment and health conditions of the inhabitants and the workers.

In 1997, during the Paris Conference, the Geological and Mining Park of Sardinia was recognized by UNESCO as an emblematic example of international relevance and then, in 2007, it was included in the world network of Geosites/Geoparks (ITALIAN GEOPARKS, 2013). The recognition made the island internationally known and made it look less artificial and closer to its thousand-year old tradition.

The case of Sardinia, albeit of medium-large size, was included in this paper because it represents the policy that better describes the Italian opportunity with regard to the question of post-mining. In Italy, recovery and promotion processes may determine the cultural, environmental and landscape potential, as well as promote local development legislation.

<p>1 Val Germanasca mining basin -Scopimineria-</p> <p>Title Val Germanasca Mining Basin</p> <p>Raw materials Copper, coal, graphite, talc, silver</p> <p>Mine tipology Tunnels</p> <p>Period of activities 1950-1980</p>	<p>2 Grosseto metal-bearing hills Park</p> <p>Title Colline metallifere grossetane</p> <p>Raw materials Copper, silver, lead, pyrite</p> <p>Mine tipology Tunnels</p> <p>Period of activity 1889-1980</p>	<p>3 San Silvestro mining park-Val di Cornia Parks-</p> <p>Title San Silvestro mining basin</p> <p>Raw materials Copper, silver, iron, chalcocite</p> <p>Mine tipology Tunnels</p> <p>Period of activity etruscan period - beginning of XX century</p>	<p>4 Mining village of Formignano</p> <p>Title Sulfur mining basin</p> <p>Raw materials Sulfur</p> <p>Mine tipology Tunnels</p> <p>Period of activity 1860-1964</p>
<p>Main Stakeholders - Comunità montana Valli Chisone e Germanasca - Municipality of L'Argentière-La Besée</p> <p>Funding sources INTERREG, European Union</p> <p>Project start/ Project end 1994/1998</p>	<p>Main Stakeholders Park Consortium (Ministry of Environment, Ministry of Culture, Tuscany Region, province of Grosseto, and interested municipalities)</p> <p>Funding sources State funds (L. 380/2000)</p> <p>Project start/ Project end 1993/2002</p>	<p>Main Stakeholders Action led by the municipality of Campiglia Marittima and managed by the company Parchi Val di Cornia S.P.A.</p> <p>Funding sources RESIDER I and II (EU), Tuscany Region funds</p> <p>Project start/ Project end First steps in 1970 - 1996/2006</p>	<p>Main Stakeholders - Società di Ricerca e Studio della Romagna Mineraria - Municipality of Cesena</p> <p>Funding sources Private donations, local bank foundation</p> <p>Project start/ Project end 1983/being completed</p>
<p>Project activities - Reclamation and environmental restoration of abandoned mines; - Exhibitions and reopening of old tunnels for educational and cultural purposes; - Collection and diffusion of miners' memories to raise public awareness; - Improvement of tourism based services to generate new economic opportunities.</p>	<p>Project activities - Enhancement of the landscape in its entirety: the abandoned industrial heritage, the etruscan archeology, the environmental and cultural patrimony; - Development of a new economic model based on local handicraft and touristic activities.</p>	<p>Project activities - Reinforcement and restoration of ancient industrial settlements (mining, tunnels, power plants, railways) to host exhibition spaces; - Development of an economic system based on local handicraft and touristic activities; - Educational activities to promote a smarter tourism based on cultural experiences and to raise public awareness on environmental and cultural issues.</p>	<p>Project activities - Restoration of Formignano mining settlement to host a museum on sulfur exploitation throughout history; - Collection of miners' memories and tools used to work underground to set up exhibitions; - Recall of traditions and fairs that workers used to hold when the mine was still active.</p>
<p>5 Marche Sulfur Park</p> <p>Title Petricara and Ca' Bernardi mining sites</p> <p>Raw materials Sulfur</p> <p>Mine tipology Tunnels</p> <p>Period of activity 1850-1964</p>	<p>6 Iron caves and foundries of Calabria</p> <p>Title Ferrete Valle dello Stilaro</p> <p>Raw materials silver, molybdenum, chalcocite</p> <p>Mine tipology Tunnels</p> <p>Period of activity 1750-1861</p>	<p>7 Geological and mining park of Sardinia</p> <p>Title Sturtinika mining basin</p> <p>Raw materials coal, iron, chalcocite, copper, lead, tin...</p> <p>Mine tipology Tunnels</p> <p>Period of activity 1720-1990</p>	<p>8 Majella mining basin</p> <p>Title Majella mining basin</p> <p>Raw materials asphalt and bitumen</p> <p>Mine tipology Tunnels - open cast</p> <p>Period of activity 1861-1950</p>
<p>Main Stakeholders - Marche Region, Ministry of Environment - Local cultural associations</p> <p>Funding sources State funds (L. 93/2001)</p> <p>Project start/ Project end 1964 concept/2001-04 institution of the park</p>	<p>Main Stakeholders - Municipality of Bivongi - Cultural association - Calabria Region</p> <p>Funding sources State funds (Calabria Region)</p> <p>Project start/ Project end 1982/being completed</p>	<p>Main Stakeholders - Sardinia region and provinces - 81 municipalities - Former miners</p> <p>Funding sources State funds, EU funds</p> <p>Project start/ Project end 1975/2001</p>	<p>Possible stakeholders - Ministries of Culture and Environment; - Abruzzo region and the province of Pescara; - Municipalities inside the former mining basin; - Local associations of former miners or citizens committed to keep the memory of the local history.</p>
<p>Project activities - Collection of memories, documents to raise awareness about local history and traditional values; - Promotion of a more conscious tourism based on a better understanding of cultural and environmental issues; - Restoration of mining settlements to design spaces for exhibitions, conference centres, business and trade activities.</p>	<p>Project activities - Restoration of archeoindustrial buildings such as mills and power plants for educational purposes and to improve knowledge about hydroelectric energy and renewable energies; - Securing the mining tunnels to create a museum on industrial archeology; - Enhancement of the landscape in all its aspects: the mining industry, the local handicraft activity, the environmental and the historical heritage.</p>	<p>Project activities - The park aims to attract visitors in Sardinia beyond the usual seaside-centered tourism by raising awareness for the cultural and the environmental value of the inland areas of the region, generating economic growth in the less developed territories; - Restoration and securing of mining pits to design exhibitions and educational visits; - Restoration of the landscape in all its aspects: the mining industry, the local handicraft activity, the environmental and the historical heritage; - Raise public awareness on issues such sustainability, environment, culture, social inclusiveness.</p>	<p>Potentials - Presence of important industrial archeology elements such as factories, railways, cableways, mining pits. - The former mining basin is located next to borders of Majella National Park; - Environmental values: rivers, creeks, mountain-pathways, local flora and fauna; - Cultural values: presence of paleolithic constructions, medieval heritages, abbeys, monasteries and ancient villages.</p>

TABLE: Outline of the analysed projects and description of the presented case study: the former Majella mining basin

5. Unresolved territories. The former Majella mining basin (Abruzzo)

The territory of the former mining basin of Majella requires an aside, since it has not yet been subject to promotion policies. The set of mining infrastructures has been frozen at the time of decommissioning, except for the more urgent actions for the implementation of safety measures for the cableways.

Currently many traces of the industrial past have been reabsorbed by nature. The vegetation has covered many of the trails to the mines and the paths used by the miners and hidden the wrecks of the trellis of the cableway. The flow of the stream Lavino cancelled sections of the dedicated railway line along the river, which used to connect the mining areas to the processing locations. Additionally, public aid has allowed creating cycling lanes over the sediment of the railway, dismantling the tracks and remodelling sections of the itinerary.

Despite the current indifference, the mining basin of bitumen and asphalt rock of Majella boasts a past of thriving activity. Already active in the Roman age, after the establishment of the Unity Government (1861) it was one of the first important industrial settlements in the territory of Abruzzo, together with the chemical poles of Bussi and Piano d'Orta. The specific character of this activity consists in the close connection with the territory in which the entire chain of production was contained in a narrow geographical area: extraction of raw materials and industrial processing of the product. This cycle, deeply rooted in the territory, has created a remarkable know-how over time: in the mining of asphalt rock, in the production of asphalt tiles and in their laying.



Photo1. View of the open cast mine Foce Valle Romana in Manoppello. (Ph. Bruno Imbastaro)

The mining industry was partly reconverted for the production of cement, exploiting the covering rocks of the asphalt fields, after the partial abandonment of the extraction of asphalt rock and bitumen because of the too high mining and retrofitting costs.

This complicated production activity, especially at its moment of maximum expansion between the late 1800's and the early 1920's, and then the establishment of the cement factory, caused a thorough transformation of the territory. The settlement network was changed and new infrastructures were established, transforming the economic and social models for a farming and pastoral area, influencing migration flows and favouring the localization of services for the inhabitants, bringing to life new territorial centres. The natural environment and the landscape have also been affected by remarkable modifications, which currently appear to be reconfigured in elements of environmental weaknesses: landslides, deviations of the spring flows and formation of artificial hills of sterile materials.



Photo 2: Facilities in Foce Valle Romana miningsite in Manoppello.(Ph. Bruno Imbastaro)

The mining basin appears today as a complicated and fragmented territory with reference to its geographical position. Located on the north face of the mountain range of the Majella - National Park established in 1991, from which perimeter the mining areas were removed - the mining sites are connected to the valley of Pescara, thanks to the long arm of the stream Lavino, where the processing facilities, the workers' homes, those of the executives and the recreational areas are located. The current landscape is the result of the layering of production activities (mining industry, farming, pastoralism), places of monastic hermitage and abbeys, the medieval settlements and the materials of the natural environment (rivers, streams, moats, forests, meadows and fauna) that make up an exclusive setting. The territory today appears like a page yet to be written, hanging in the balance between an accomplished past and an uncertain future.

The accomplished economic process withstood the long-term unification of the area and represented the background of recognizable transformations. This area, in crisis and marginalized, can be interpreted as an "intersection", a transept that stretches from the river Pescara to the mountain. This area is witness to interesting transformation processes due to the fact that it is part of the natural Park and it can be relocated in a scenario of local development according to new perspectives, provided that such processes are adequately supported.



Photo 3 and 4. Miners' locker rooms and cableway in Foce Valle Romana (Ph. Bruno Imbastaro)

The question of the promotion of this territory eventually goes beyond the simple definition *ex-ante* of the rules of organization, of the individual promotion policies and the individual perspectives. The project of open spaces should be interpreted as systems that are able to formulate and modulate the relationships between the different and heterogeneous materials of the landscape and the inhabited space. This method favours the recovery processes of the territory. The opportunity to operate in the thematic field of the coal field may overcome diversified managements which express specific content with a resulting total increase in the supply of territorial, landscape and environmental services.

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