

THE QUARRIES IN THE COASTAL MUNICIPALITIES OF WESTERN LIGURIA: REFLECTIONS ON LANDSCAPE PROTECTION WITH A VIEW TO THEIR RECOVERY

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Abstract: The coastal landscape, and in particular, to the extent of interest in the present work, that of western Liguria, constitutes one of the most delicate territorial areas that has undergone the greatest and most significant transformations. The coastal processes of industrialisation and urbanisation, linked above all to seaside tourism, have induced radical transformations, directly linked to the development of the railway, which in the 19th century drew a strongly built coastal landscape with bridges, tunnels, support works, and allowed the settlement and development of industrial and commercial settlements. Among these economic activities, mining activities, and in particular open-cast quarries, have contributed to the transformation of the landscape, due to their strong impact on the morphological structure of the territory. What we often read today as 'wounds' of the territory, have fed strategic sectors for the national economy, such as construction and infrastructure, with motives that are no longer economically relevant or sustainable from an environmental and landscape point of view, and need to be 'healed'.

In Liguria there are 383 disused quarries that, although small to medium-sized, represent a significant challenge. In western Liguria, out of 224 disused quarries, 78 are currently reused for tertiary or industrial or artisan purposes, 64 are spontaneously renaturalised, 11 are restored to their natural state and 71 are abandoned without plans. Most of them are located in the province of Savona, with about 46 % of the total number.

Through the analysis of a number of case studies, their formation, evolution and decommissioning, such as the Ghigliazza quarries in Finale Ligure, this work aims to draw attention to and stimulate reflection on the role that landscape protection can play in governing and directing the choices of reuse of particularly delicate situations from a landscape, environmental and economic point of view.

Key words: Protection, Enhancement, Coastal areas, Quarries

Introduction: the situation of disused quarries in Italy

The number of active quarries in Italy, as shown in the Quarry Reports prepared by Legambiente, has gone from 5725 in 2008 to 4168 in 2021, a 15 % decrease and a parallel increase in the number of abandoned ones from 13 414 in 2017 to 14 141 in 2021. In quantitative terms, these figures reflect the evolution of the mining economy. If, from the middle of the last century, they represented a strategic resource for the country's socio-economic development, linked to the important phase of industrialisation and urbanisation of those years, already from the second half of the 19th century, these phenomena underwent a slowdown that was also reflected in mining activities. The strong contraction in the demand for building materials led over time to the decommissioning or abandonment of industrial sites for the extraction of sand, gravel, limestone, ornamental stones, etc.

According to data available on the Liguria Region's geoportal, there are 383 disused quarries in Liguria. Although they are of medium-small size – 90 % have a surface area of less than one hectare - they represent a significant problem. Most are located in the Province of Savona (No. 176) with about 46 % of the total number of quarries, followed by the Province of Genoa (No. 90) with 23.50 %, the Province of La Spezia (No. 69) with about 18 %, and finally the Province of Imperia (No. 48) with 12 %. The Province of Savona thus emerges as the one with the most 'homogeneous' distribution of sites, both in numerical terms, since most of the municipalities in the province have an abandoned quarry, and in geographical terms, since quarries are distributed fairly evenly between coastal and inland municipalities. In western Liguria out of 224 disused quarries, 64 are spontaneously renaturalised, 11 are recovered in terms of landscape, 60 are currently reused for services or for industrial or craft purposes, 9 are reused for agricultural-forestry purposes, 9 are reused for residential purposes, and 71, 30 %, are abandoned without recovery projects (Fig. 1).



Figure 1 – Extract of the cartography of disused quarry sites in western Liguria (taken from the Liguria Region geoportal).

Quarry sites and regulations

National legislation on the extraction of solid minerals from mines and quarries still dates back to Royal Decree No 1443 of 1927, which distinguishes, on the basis of the material extracted, between first-category extractive industries (mines) and second-category industries (quarries and peat bogs).

The competences relating to the mining of non-energy minerals have been transferred, at different times, to the Regions (quarries by Presidential Decree No. 616 of 24 July 1977 and mines by Legislative Decree No. 112 of 31 March 1998 and Legislative Decree No. 83 of 22 June 2012), which have legislated on the matter.

As far as the Region of Liguria is concerned, the first regulation concerning the cultivation of quarries and peat bogs was Regional Law no. 12 of 10 April 1979, which defined the authorisation procedures to be applied to existing quarries, which at the time were not governed by sector regulations; this law introduced the Territorial Plan of Quarry Activities as a general framework for the exploitation of deposits in the regional territory. In 2012, the Region approved a reorganisation regulation: Regional Framework Law No. 12 of 5 April 2012, which was further updated and amended by Regional Law No. 18 of 2 August 2017. The objectives of this regulation are to reconcile the need to consider quarrying as an economic activity of primary importance with the protection of the environment and the landscape, as well as to achieve a simplification of administrative procedures.

Through the formation and approval of the Regional Territorial Plan of Quarry Activities (Ptrac), the regulation also aims to encourage the environmental restoration of the areas affected by quarrying. The Plan, which identifies the areas in which open-cast or underground quarrying and the storage of slate extraction waste may be permitted, is based on the principle, among others, of considering the transformation of the quarry territory as a temporary process oriented towards the best design solution for environmental recomposition and enhancing the mining areas for museum, tourist and recreational purposes, especially for sites with geological, naturalistic, historical and cultural value.

The Plan identifies as one of the criteria for the approval of a mining activity the contextuality between cultivation and environmental restoration and the identification of a boundary strip destined for works of reconnection to the context landscape that will have to guarantee an effective landscape harmonisation without interruption.

Open-cast quarrying activities shall not entail the overburdening of ridges that are significant for the coastline or for emerging views (Aurelia routes, historic conservation nuclei, Unesco sites), without prejudice to individual cases punctually identified by the project cards of the operating framework, where partial overburdening is compensated for by the reconstruction of a new ridge line that in any case occludes the view of the quarry from the coastline or from the significant views identified. In such cases, appropriate landscape and environmental compensation works will also be envisaged. As a general rule, the presence of natural cliffs and the memory of lithic elements is subject to enhancement.

In Articles 12-13-14 the plan currently in force (D.C.R. 26 May 2020 no. 7) indicates specific Landscape Disciplines for quarries and related structures that, as

a function of the environmental and landscape recomposition of the site, envisage, at the conclusion of the quarrying activity, the demolition of all service buildings or in the planning stages that compensation and balancing of reductions in wooded areas and induced transformations be anticipated that indigenous plant species are used for renaturalisation works, composed according to patterns that can be traced back to the reference landscapes; that morphological discontinuity with the context is camouflaged.

The Plan, however, does not consider quarries that are no longer productive from the point of view of the exploitation of the deposit, limiting itself to a census of disused quarries with an excavation volume of more than 5000 cubic metres whose activity ceased prior to 2011 and disused quarries in the process of being abandoned.

Finally, the Region approved Regional Law No. 31 of 12 November 2014 containing the 'regulations for the recovery and valorisation of mining sites for museum, tourist and recreational purposes'. Although this is a purely procedural regulation, the aim of the legislation is to *regulate the procedures through which interventions can be authorised in order to:*

- a) to promote knowledge and preserve the memory of the industry and work of the Ligurian community;*
- (b) encourage the environmental restoration of areas affected by cultivation, especially if they are degraded or in a state of neglect;*
- (c) encourage scientific research, training, education and dissemination;*
- d) expand the tourist offer and opportunities for conscious use of the regional territory;*
- (e) contribute to the sustainable development of economically fragile areas;*
- (f) ensuring safe public enjoyment of enhanced sites while preserving their essential characteristics.*

In addition, the regulation states that the Region, among other things, shall approve the criteria and guidelines for the redevelopment of disused or abandoned mining sites. In fact, after a few years, the Liguria Region adopted the 'Guidelines for the design, management and environmental rehabilitation of open-cast and underground mining activities and related works' in 2019, updating them in 2021. With the aim of providing indications for a correct approach to the management of extractive activities, the guidelines, while envisaging the development of resource exploitation in terms of environmental sustainability, aim to minimise their impact, guarantee functionality, safety and productivity, rationalise the use of non-renewable natural resources, and, in any case, consider the recovery of the areas subject to excavation.

Providing some solutions for the recovery of the sites at the end of cultivation activity (such as the Remodelling of the slopes, also by means of backfilling, the Maintenance of the non-returnable front, with the execution of possible works for stability and landscape and naturalistic reintegration, the Reuse of the forecourt for activities consistent with the urban planning forecasts, after securing and arranging the front, the Creation of artificial basins for storing irrigation water or water to be used for different purposes), already in the introduction of the document it is anticipated that the new cultivation projects must be conceived and designed with a view to the final arrangement of the sites.

In the 'general binding criteria' for the design of cultivation and environmental restoration, the project performance requirements are indicated, among which, for what is of interest here, a primary role is played by the prediction of the final use, which *must be compatible and consistent with the landscape, environmental and urban surroundings*.

Moreover, among the principles that the project must follow, those dedicated to the recovery of the areas, as follows, find a prominent place, bearing witness to an increasingly incisive attention to the landscape and environmental aspects at the end of production: *"(...) 2. recovery must not be limited to the mere securing of the fronts, the accumulation of materials, the portals and slopes and the forecast of the dismantling of the facilities, but must also propose useful elements of territorial enhancement in coherence with the planning guidelines;*

3. environmental rehabilitation must be a complementary purpose during mining, so that the design must provide that rehabilitation works are carried out at the same time as mining and not relegated as a final act of exploitation;

4. the final destination of the site must envisage a configuration such as to fit adequately into the landscape context, in accordance with the provisions of the territorial and landscape planning instruments in force. As a general rule, and with particular regard to those cases where the quarry is included in the Natura 2000 Network areas or in areas suitable to constitute an ecological-functional link between sites, the final destination must prioritise naturalistic recovery in harmony with the vocation of the surrounding territory.

Pursuant to Article 1(4) of the aforementioned law, in the case of assets recognised as being of cultural interest, recovery and enhancement are carried out in compliance with the principle of cooperation between the State, the Regions and the local authorities as set out in Article 5 of Legislative Decree 42/2004 'Cultural Heritage and Landscape Code'.

In relation to mining activities located in areas subject to landscape protection pursuant to the above-mentioned Code and for the purposes of administrative simplification, especially with reference to potential discrepancies between what is authorised and what is realised and/or modified during operations, the guidelines, in Appendix 6, introduce the possibility of inserting "flexibility rules" with regard to certain well-defined situations such as the construction of service structures, plants, quarry fronts and relative internal tracks, access roads and, with regard to underground quarries, the size and positioning of access points.

As can be deduced from the above, the reference to territorial planning is very clear and pregnant. While Liguria can be said to have been particularly 'enlightened' back in 1990 with the approval of the Territorial Plan for Landscape Coordination (Ptcp), which is still valid today despite the attempts to overcome it with the new Regional Territorial Plan (Ptr), the same cannot be said in terms of landscape protection, considering the fact that the Landscape Plan envisaged by Legislative Decree 42/2004 has not yet been completed.

The current Ptcp dedicates a special section to quarries and mines (Sec. IV), which are governed in particular by the plan's vegetation regulations concerning the landscape components consisting of the slopes, the hydrographic network, the flat areas on the valley floor, the coastline, quarries and mines, and landfills. Of

particular interest for the themes of the present work is Article 88 in which there is already a brief mention of the issues of landscape-environmental recovery: the project must "establish the methods and phases of execution that ensure the progressive recovery of satisfactory environmental quality conditions".

The connection between quarrying activities and landscape protection is clear in the very definition of landscape, which the European Landscape Convention of 20/10/2000 defines as "a certain part of the territory, as perceived by populations, whose character derives from the action of natural and/or human factors and their interrelationships". Landscape thus understood as a static fact, all the more positive if it has remained intact in its original state, but a tension and mediation between nature and human activity that generates new balances or imbalances. In extractive landscapes, this dynamic vision is particularly evident if we consider the productive phase a transitional phase, representing important evidence of man's productive activity, towards new landscapes that may become of particular interest and to be enhanced.

According to Article 6 of the Cultural Heritage Code, valorisation, with reference to the landscape, 'also includes the redevelopment of buildings and areas subject to protection that are compromised or degraded, or the creation of new coherent and integrated landscape values'. Therefore, through the project of recovery, re-use, re-functionalisation, the objective to be achieved is that of a new landscape quality of the sites.

The protection and valorisation of disused and/or abandoned quarries, in the current state of planning in the Liguria region, is therefore entrusted to the aforementioned Code of Cultural Heritage and in particular to Part III, which, as is well known, concerns Landscape Heritage.

Indeed, as far as Part II - Cultural Heritage - is concerned, it is rather difficult to recognise the quarry site as a cultural asset of special interest; such recognition is more often limited to the elements of industrial archaeology that may be present within the sites themselves.

Therefore, the governance of these areas when they are located in areas subject to landscape protection (ex art. 136 or ex art. 142), whether it is a question of starting or continuing quarry cultivation activities, as well as to undertake environmental restoration activities, remains limited to the application of the Code as it is also necessary to obtain the landscape authorisation referred to in art. 146 of the same Code.

In this regard, it is necessary to recall the provisions of Article 131 on the protection and enhancement of the landscape, where it states that for the purpose of enhancement, to be carried out in compliance with the requirements of protection, the administrations shall promote the realisation of new coherent and integrated landscape values.

The recovery of abandoned quarries through examples

As can be deduced from the situation in western Liguria described above (90 quarries recovered compared to 224 abandoned) and from the examples that

follow, the recovery of long-abandoned and disused extractive landscapes is a very complex issue, involving innumerable areas of specialisation, from landscape to engineering and economic.

Projects involving abandoned quarries, which are strongly conditioned by the morphology they have taken on during the cultivation phase, and by the profound environmental degradation in which they often find themselves, must also be confronted with the processes of naturalisation that have led to the creation of new ecosystems, sometimes even with singular characteristics.

The redevelopment of these sites has seen different types of redevelopment over time: spontaneous renaturation in 30 % of cases, reuse of the area for new functions, mainly industrial, for services and residential, and only two quarries in the whole of Liguria have been recovered for museum purposes (Gambatesa in Municipality of Ne e Masso in Municipality of Castiglione Chiavarese, both in eastern Liguria). While 30 % have no recovery plans or redevelopment processes have been underway for many years. It should be emphasised that the quarries located near the coast (about n. 90) have a recovery forecast mainly for residential purposes; this choice is obviously linked to the economic advantage due to the location, which makes the conversion operation economically advantageous for the owner of the area. The quarries are in fact mainly privately owned, and the intervention must be such as to guarantee an economic return, which as things stand, as far as western Liguria is concerned, seems to be particularly linked to residential solutions.

From this point of view, disused sites located in areas with a strong vocation for tourism and which, in the case of the examples given, have valuable archaeological, landscape and environmental features, are particularly interesting; these areas are highly attractive on the real estate market, capable of guaranteeing a business profit and compensating for the costs of securing the area, highlighting the need for a complex interaction between industrial activity and environmental conservation.

The subject of site safety measures is of primary importance, since they are necessary and indispensable whatever the reutilisation project may be, and are therefore a very conspicuous part of the intervention both from the point of view of the work required and from the economic point of view. Just think of the stability of quarry fronts that must be secured even in the event of their renaturation project in order to avoid dangers to public safety.

Ex Cave Ghigliazza a Finale Ligure (SV)

The Ghigliazza or Arene Candide quarry area is the largest disused quarry in Liguria, covering an area of approximately 400. It is located directly on the sea, in one of the most valuable landscape areas in Liguria, which includes the Caprazoppa promontory, one of the last undeveloped promontories on the Savona coast, the karst area below and the Arene Candide Cave, an important archaeological site, the only one in the western Mediterranean to bear witness to the almost continuous human habitation since the Upper Palaeolithic.



Figure 2 – Historical photo of the Ghigliazza quarry area.

The toponym Arena Candida has been attested since the 12th century and is due to the presence of a dune of siliceous sand, four hundred metres long and sixty metres high, that the winds had pushed against the Caprazoppa promontory. Due to its light colour and size, it stood out from afar and indicated the position of Finale to sailors. The dune characterised the area, so much so that, during the period of the Ligurian Democratic Republic (1798-99), the municipalities of the Finale area were united in the 'Jurisdizione delle Arene Candide' (Fig. 2).

The area is protected by landscape, archaeological and environmental protection through the declarations of interest of the Code of Cultural and Landscape Heritage (D.M. 24.04.1985, D.P.G.R. 29.03.1984, D.M. 08.06.1943, D.M. 05.05.1951, D. Lgs. 42/2004, art. 142, par. 1, lett. a) and g)), the special protection ZCS "Finalese - Capo Noli" (IT1323201), the Finalese Provincial Protected Area and the Borgio-Caprazoppa karst area (N. 29-SV) (Fig. 3).



Figure 3 – Aerial view of the Ghigliazza quarry.

The Territorial Plan for Landscape Coordination of the Finale area recognises among the distinctive features of the area the uniqueness due to geological and morphological features linked to the formation of the Finale stone and to the development of karst phenomena due to the erosive action of the Miocene sea; the landscape articulation of the Caprazoppa promontory; the remarkable value in terms of flora and phytogeography, with the presence of endemic species; a significant balance relationship between settlements and natural sites largely determined by the exclusive territorial specificities (morphology, geology, etc..). The Plan itself emphasises the interest in maintaining the achieved landscape-environmental balance unaltered, favouring in future developments a rigorous defence of the values described above.

Despite the exceptionality of the context, in 1800 Antonio Ghigliazza undertook an industrial activity with the firm Fratelli Ghigliazza, quarrying the sand that made up the 'arene candide' dune and the limestone from the cliff on which the dune rested, for the production of lime and glass.

The Arene Candide beach land was transferred by the State Administration with full rights to the brothers Angelo and Giacomo Ghigliazza with two successive contracts dated 22/10/1905 and 05/12/1912. In 1924, the dune removal activity ended, while the mining activity lasted until 1990, extending over the entire Caprazoppa mountain, for a front of about 500 metres and a depth of more than 400 metres (Fig. 4-5).



Figure 4 – Current view of the quarry area.

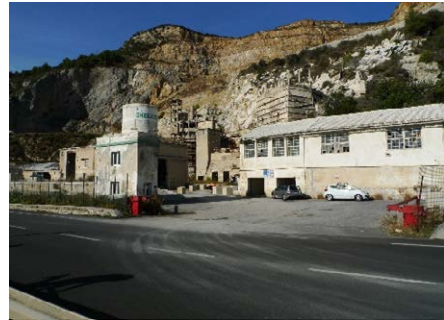


Figure 5 – The quarry front and the buildings serving the Ghigliazza quarry activity.

Starting in 2005, following the sale of the area, a long planning process began, which included the drafting of an Urban Operational Project aimed at securing and renaturalising the quarry fronts and, mainly, at building a new residential settlement with an annexed thalassotherapy centre, indoor sports centre, road network, car parks and public functions for a total of approximately 100 000 cubic metres of new buildings. The coexistence of archaeological, cultural and landscape interests also led to the involvement of the Ministry of Culture, which signed an agreement in 2008 to enhance the archaeological area.



Figure 6 – Photo inserts of the Ghigliazza quarry rehabilitation project for residential purposes.

Following an initial negative Environmental Impact Assessment opinion in 2009, the PUO was revised several times with the aim of reducing the overall impact on the landscape and the environment. Subsequently, four different projects were approved between 2009 and 2018, when the owner company filed for bankruptcy without completing the project (Fig. 6).

As things stand, the new owners, who bought the land at auction, are about to embark on a new planning phase that will have to deal with the changed sensitivity towards the landscape and the environment, as well as with the unresolved problems left by the last project regarding the securing of the fronts, the request for greater public use, the valorisation of the testimonial buildings in the entire area, and the volumetric reduction of the residences.

To date, 19 years after the first elaboration of the PUO, the project has still not been realised and the quarry and service buildings have been abandoned; furthermore, the project process will have to be restarted with new proposals.

Former Grimaldi Quarries in Ventimiglia (IM)

The Terre Bianche ex Grimaldi Quarries area covers an area of approximately 11000 square metres, in an area of scenic value that can be read in context as a green area within a considerably anthropised territory and that includes in the immediate vicinity Villa Hanbury with its internationally important botanical garden of the same name.

The landscape importance of the area is highlighted by the presence of extensive areas declared to be of public interest pursuant to Article 136 of the Cultural Heritage and Landscape Code (Ministerial Decree 24/04/1985, Ministerial Decree 14/01/1959, Ministerial Decree 28/02/1961) because the area "forms a natural framework of uncommon beauty", while the environmental character is highlighted by the special protection ZCS "Capo Mortola", due to the presence of Mediterranean coniferous forest habitats and rare and protected species of considerable biogeographical and endemic interest. On a geological level, the site is formed of arenaceous, calcareous, marly and argillitic lithotypes of considerable value and is included in the Grammondo karst area (No. IM-01) (Fig. 7).



Figure 7 – View of the Grimaldi quarry area.

The plan on the area, currently owned by the Grimaldi family, following a Programme Agreement, signed in February 2024 between the Municipality, the property, the Liguria Region and the University of Genoa, as concessionaire of the Hambury gardens, is to build a real estate complex for residential and tourist use for a total of 30000 cubic metres (Figg. 8 – 9).

In order to implement the intervention, it was necessary to proceed with a variation of the planning instruments. As far as the PTCP is concerned, the area was changed from a non-settled area, a regulatory area of *conservation*, to a non-settled area, a regulatory regime of *transformability*, thus modifying the primary objective of preserving the current situation without settlements, by virtue of the 'high naturalistic-environmental value', to an area in which it is possible to envisage settlement development.

The authorisation process, also from a landscape point of view, has not yet been completed and therefore the project has not yet been realised.



Figure 8 – Photo inset of the Grimaldi quarry reclamation project for residential use.



Figure 9 – Photo inset of the Grimaldi quarry reclamation project for residential use.



Figure 10 – Aerial view of the Italcementi quarry area.

Former Italcementi Quarries in Pietra Ligure (SV)

The area of intervention consists of the three disused Italcementi quarries in Pietra Ligure within a karstic area characterised by the Rocca delle Fene (No. 27-SV), the karstic hill of Trabocchetto and archaeological settlements dating back to the Early Iron Age (Fig. 10).



Figure 11 – The abandoned quarry site and service artifacts.

Mining activity began in the late 19th century at the oldest quarry, known today as 'Cava vecchia', and continued with the opening of several quarries for the extraction of limestone for the production of lime, especially from the 1930s until the 1960s. The particular type of quarrying, known as 'funnel' quarrying, can still be seen today in the quarries located close to the Via Aurelia and at the summit of Monte Trabocchetto, of which there are still remains of the tunnels created at the base of the funnel for the transport of the material descending by gravity.

The landscape importance of the area is highlighted by the presence of extensive areas declared to be of public interest pursuant to art. 136 under Ministerial Decree 20/03/1956 and art. 142 c.1 lett. a), c) and g) of the Cultural Heritage and Landscape Code. In terms of landscape planning, the PTCP identifies within the area the Emerging Artefact of the 'Archaeological Traces of Ligurian Settlement of the Early Iron Age' and identifies the site as falling within an area of scattered settlements with normative maintenance regulations (IS-MA). The project, a private initiative, got underway in 2006 with the planning of an Urban Implementation Tool for the "Landscape and Environmental Restructuring of the former quarries owned by Italcementi" (Fig. 11).

The subsequent Services Conference closed in 2011 with the approval of the intervention for the residential reuse of the former Italcementi Quarries, which envisages the construction of four housing lots, for a total of 140 flats or 42000 cubic metres (of which 16 % in Rocca delle Fene and 84 % in the Quarries area), a new urban park extending as far as the archaeological site of Pian dell'Olio, a panoramic lift connecting the historic centre to the hill, and new car parks (Fig. 12).



Figure 22 – Photo inset of the quarry rehabilitation project for residential use.

To date, 13 years after the project was approved, the project has still not been realised and the quarry and service buildings are abandoned.

Conclusions

The key aspects of the management and rehabilitation of abandoned quarry sites can be succinctly identified in their important historical and cultural significance, due to their long-standing activity contributing to the economic development and cultural heritage of the region and their consequent impact on the local economy, historically providing jobs.

It is clear, however, that these sites produce considerable 'impacts' on the landscape in which they are located: the removal of more or less large quantities of rock material creates significant alterations on the landscape, not only from an ecological and environmental point of view, with consequent effects on biodiversity and morphology, but also in terms of their visual impact.

The issue of quarry restoration represents a complex challenge in terms of landscape protection and recovery: transforming these sites into 'resources' for future generations by integrating their historical significance with landscape values in order to build a new sustainable landscape.

Whatever the rehabilitation project, abandoned quarry sites always present a 'degradation' situation due to the need to secure them (stability of quarry fronts, soil erosion, water contamination, etc.) on which it would always be necessary to intervene. Therefore, they constitute, even in the simplest case of their renaturalisation, an opportunity to create new landscapes as indicated by both the European Landscape Convention and the Cultural Heritage Code.

Going back to the notion of landscape as a relationship between man and the environment, typical of the identity of the places it represents, the projects concerning these particular areas cannot but place themselves in the wake of the sites' transformations while still preserving their identity. In this sense, the aim should be to achieve a new landscape quality that recognises and maintains the characteristics and peculiarities, including new ones that have come about following the abandonment of mining activity, of the sites.

With regard to the particular situation of the abandoned quarry areas in western Liguria, due in particular to their location on or near the coast and therefore characterised by the high real estate values that derive from them, little attention must be paid to the landscape values to be preserved, limiting the planning of interventions to the construction of more or less substantial building compounds.

Often, however, they are "out of scale", both in terms of the physical dimensions of the areas and the impacts that the new solutions produce, with respect to the territories of the municipalities in which they are located; this situation is reflected in an evident difficulty both in the planning itself and in the management of the authorisation procedures. It is no coincidence that all the examples reported have not been completed, having had approval processes lasting more than 10 years.

The protection of abandoned quarry sites, which is mostly limited to the need to obtain landscape authorisation, cannot prevent the above examples, as it can only

reduce the volumetric impacts of new projects, be they residential or service projects, without being able to have a decisive influence on either reuse choices or design quality.

In Liguria, more than in other regions, there is a lack of studies that build up a wealth of knowledge of quarry activities that could lead to targeted and conscious planning of the future of these areas, a prerequisite for the construction of territorial policies. Building up a wealth of knowledge would allow implementation at various planning levels and would form the basis for large-scale valorisation. The drafting of the Regional Landscape Plan could be an opportunity in this sense, but unfortunately its drafting has been at a standstill for some years. The PPR would be the right place to outline the future transformations of degraded areas, as provided for by Article 143 of the Cultural Heritage and Landscape Code, identifying the significantly compromised or degraded areas and the enhancement measures compatible with the protection requirements, to be submitted to specific agreements between the actors involved, such as Programme Agreements and Institutional Agreements.

Experiences in other Italian regions that have quarries similar to Liguria in terms of location in areas of particular landscape and environmental value and extension, such as Tuscany and Sardinia, show that the instruments to be entrusted with the valorisation of these sites are mainly theme parks, geo-mineral or archaeological parks connected with each other and with the identification of specific routes, capable of integrating the mining and geological values with the landscape values present in the territory.

Other experiences indicate how nature redevelopment and the creation of educational and hiking trails can create new landscapes, such as the Parco della Cave in Milan, the quarry in Bareggio (MI), the quarries in Botticino (BS) or the Le Chiesuole nature area within the Parchi del Ducato in Emilia.

Therefore, to give just one example, it can be considered that, among the cases cited, the Arene Candide quarry, given its landscape, historical and archaeological characteristics, could be the subject of cultural, educational and social projects that would enhance the Finale area, going beyond the purely economic vision of land exploitation for speculative purposes.

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